National Library
of Canada

Bibliothèque nationale
du Canada

Canadian Theses Service

Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, tests publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30.

NL-339 (r. 88/04)

Canada

THE UNIVERSITY OF ALBERTA

THE IDENTIFICATION OF SPECIAL NEEDS CHILDREN BY PARENTAL REPORT ON THE PERSONALITY INVENTORY FOR CHILDREN

by

© JAMES A. LUETTGEN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

ISBN 0-315-45672-8

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: James A. Luettgen

TITLE OF THESIS: THE IDENTIFICATION OF SPECIAL NEEDS CHILDREN BY PARENTAL REPORT ON THE PERSONALITY INVENTORY FOR CHILDREN

DEGREE: DOCTOR OF PHILOSOPHY

YEAR THIS DEGREE GRANTED: 1988

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(Student's Signature)

17103 86 Ave.
Edmonton, Alberta T5T 0L3
(Student's permanent address)

DATE: July 25, 1988

THE UNIVERSITY OF ALBERTA

THE FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "The Identification of Special Needs Children by Parental Report on the Personality Inventory for Children" submitted by James A. Luettgen in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Psychology.

Peter Calder

Supervisor

Malcolm Blowers

K L Ward

Date: June 29, 1988

DEDICATION

To every undiagnosed student with a Learning Disability who was told, "all you have to do is work harder".

ABSTRACT

The present study was conducted to determine whether parent-provided information on the Personality Inventory for Children (PIC) is useful in identifying students with special education needs.

The 53 participating subjects enrolled in grades two through seven consisted of 17 students enrolled in Special Needs programs (intellectual abilities in the Borderline to Educable Mentally Handicapped range), 18 Learning Disabled students receiving resource room assistance, and 18 students enrolled in regular classes.

Parents of the students completed the PIC. For the purpose of obtaining measures of the external validity of the PIC, file records of intelligence and achievement were obtained and teachers completed the Walker Problem Identification Checklist.

PIC scale analyses using T-score cutoffs indicated that it was possible to differentiate the three educational groups. The three groups were best differentiated on the Cognitive Triad scales.

The Special Needs group had substantial elevations on the Cognitive Triad scales and had the most psychopathology as indicated by elevations on the other Clinical scales. The Resource group also had marked elevations on the the Cognitive Triad scales and had the highest elevation as a group on the Hyperactivity scale. The Regular Class group had a normal profile comparable to the norms provided by the PIC authors.

Cases study analyses indicated that the Adjustment screening scale can not be used in special education screening as it is in clinical settings to identify children in need of further assessment. The best screening strategy appeared to be examining the Validity and Cognitive Triad scales. Little evidence was found supporting the concept of distinct Special Education personality types. Individual subjects in the Special Education groups displayed the most psychopathology on the PIC scales, but had overlapping PIC profiles.

Correlations with the WISC-R, Otis-Lennon, Canadian Achievement Tests, and the Walker Checklist were of a magnitude that provided support for external validity of the PIC.

It was suggested that parental report on the PIC could assist in the process of identifying students with Special Education needs and provide a wealth of information to assist in the placement of Special Education students.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the guidance and mentorship of Dr. Peter Calder without whose encouragement this thesis would not have been accomplished.

"Man is so made that when anything fires his soul, impossibilities vanish" - - Jean de la Fontaine.

TABLE OF CONTENTS

CHAPTER PAGE

I. INTRODUCTION 1

Background to the Problem 1

The Purpose of the Study 5

Definition of Terms 7

II. ISSUES IN PSYCHOEDUCATIONAL TESTING AND DIAGNOSIS 10

Labelling 10

Educational Classifications 13

Problems in Differential Diagnosis 17

Assessment Strategies 19

Projective Techniques 20

Objective Personality Techniques 21

Direct Behavioral Observation 24

Indirect Empirical Techniques 25

III OVERVIEW AND DESCRIPTION OF THE PIC 28

Description of the PIC 28

Development of the PIC 32

Reliability Studies of the PIC 34

Validity Studies of the PIC 35

Construct Validity 36

Criterion Related Validity of the PIC 40

PIC Studies with the Educationally Handicapped 43

Summary of PIC Literature Review 51

Rationale for the Current Investigation 54

IV. METHOD 57

Subjects 57

Instruments 62

Procedure 69

Research Questions and Analyses 72

V. RESULTS 76

Descriptive Statistics 76

Research Question Results 88

External Validity of the PIC 115

Summary of Results 126

VI. CASE STUDIES OF THE PIC 129

Regular Class Group Case Studies 130

Resource Group Case Studies 136

Special Needs Group Case Studies 141

Summary of Case Study Analysis 145

VII. Summary 149

Overview 149

Interpretation of Results 151

The Cognitive Triad 151

A Special Education Personality Type? 152

External Validation of the PIC 156

Parental Acceptance of the PIC 157

Limitations and Suggestions for Research 158
Conclusion 159
REFERENCES 161
APPENDICES 180

LIST OF TABLES

TABLE PAGE

1 Subject Demographics by Group: Age, Sex, WISC-R, Otis-Lennon DIQ, and Canadian Achievement Tests 59

2 Score Means and Standard Deviations for the PIC Profile Scales 77

3 Scale Score Means and Standard Deviations for the PIC Factor Scales 82

4 Score Means and Standard Deviations for the PIC Experimental Scales 84

5 Score Means and Standard Deviations for the Walker Total and Factor Scales 86

6 The Analysis of Variance for the PIC Adjustment Scale 89

7 The Manova Conducted on the PIC Validity Scales and Heck Test for Group Comparisons 92

8 The Manova for the PIC Factor Scales and the Heck Test for Group Comparisons 93

9 The Manova Conducted on the Cognitive Triad and the Heck Test for Group Comparisons 95

10 The Manova the Clinical Scales without the Cognitive Triad and the Heck Test for Group Comparisons 97

11 Percentage of Subjects with Scales Scores above 60 and 70 for the 20 Regular PIC Scales 98

12 Percentage of Subjects Having Scale Scores Above 60 and 70 for the Experimental PIC Scales 101

13 Group Differences in Percentages of Scale Scores Above 60 and 70 for the 20 Regular PIC Scales 104

14 Group Differences in Percentages of Scale Scores above 60 and 70 for the PIC Experimental Scales 106

LIST OF TABLES Cont.

TABLE PAGE

15 Significant Chi-Square Analyses Conducted on the 60+ Scale Score Cutoffs for All PIC Scales 108

16 Significant Chi-Square Analyses Conducted on the 70+ Cutoffs for All PIC Scales 110

17 Frequency Distribution of the Number of Scale Elevations over 60+ for the 20 Regular PIC Scales 113

18 Frequency Distribution of the Number of Scale Elevations over 70+ for 20 Regular PIC Scales 114

19 Pearson Correlations for the 13 Regular PIC Scales and the Walker Checklist Scales 118

20 Pearson Correlations for the PIC Cognitive Scales with the Otis-Lennon, Canadian Achievements Tests, and WISC-R 123

LIST OF FIGURES

FIGURE		PAGE
1	Mean PIC Scale Scores for the Three Educational Groups	80
2	Mean Walker Scale Scores for the Three Educational Groups	87
3	The PIC Profile for Student 1 (Regular Class)	131
4	The PIC Profile for Student 2 (Regular Class)	134
5	The PIC Profile for Student 3 (Resource)	137
6	The PIC Profile for Student 4 (Resource)	139
7	The PIC Profile for Student 5 (Special Needs)	142
8	The PIC Profile for Student 6 (Special Needs)	144

CHAPTER I

Introduction

Background to the Problem

The identification and classification of children with special needs is becoming a major concern of the North American educational system. In the United States this has been a particular concern since the passage of Public Law 94-142, the Education for All Handicapped Children Act of 1975 and the Rehabilitation Act Amendments of 1974.

In April of 1985, Section 15 of the Canadian Charter of Rights and Freedoms was enacted which guarantees rights to individuals with mental and physical handicaps. Kimmins, Hunter, and McKay (1985) point out that under Section 7 of the Charter, the "Due Process" section, it can be argued that programs for special needs students are mandated by the Charter. At the provincial level recent legislation also guarantees new educational rights to special needs students. Bill 82 in Ontario and new legislation in Quebec have mirrored the U.S. trend.

Apart from an increasing legal obligation to identify special needs children, an accurate and early assessment of a child who is experiencing academically related difficulties is important for the implementation of appropriate educational programs. The implicit assumption which underlies the activities of a multi-disciplinary educational assessment is that certain groups of children are so "different" that categorical distinctions are possible, and that the cognitive, perceptual, psycholinguistic, and social behaviors of these children vary between groups (McCarthy & Paraskevopoulus, 1969).

The goal of the assessment is the provision of an appropriate educational intervention designed to meet the needs revealed by the assessment. The individual educational program is in part determined by the initial assessment of the handicapping condition. As Bergan and Tombari (1976) point out, the psychologist's success in proposing solutions to children's problems and having these implemented is largely dependant on the initial stage of problem identification. Failure to correctly identify and apply appropriate intervention strategies based on initial problem identification could serve to compound the problem.

The Problem Under Investigation

In addition to considering the issues of the need for early identification and the increasing legal requirements for identification, the rural school system is faced with the identification and implementation of services to special needs children over long distances.

The need for sound screening procedures to assist in the identification of special needs children is particularly relevant to large rural school divisions. Psychologists who provide services to rural areas are among those educational professionals who have expressed a persistent need for a comprehensive, well researched instrument which has relevant applications to educational programming.

The Personality Inventory for Children (PIC) (Wirt, Lachar, Klinedeist, & Seat, 1977) had been used as a psychiatric referral screening device by the writer in a rural school division. The PIC was used as a screening device for children who were experiencing behavioral or emotional problems. This particular instrument proved attractive for several reasons. Since the questionnaire is completed by the parent, the PIC overcomes the obstacle of assigning additional clerical duties to teachers. The PIC also proved attractive because it involves the parent in the assessment process. Since the PIC administration did not require the cooperation of the child, it could be used when screening children who might not have the motivation, physical capacity, or cognitive ability needed in many traditional assessment tasks. The major advantage found was that the PIC Adjustment scale indicated whether there was a need for further psychological/psychiatric evaluation.

Psychiatric services in the rural area were provided by traveling physician who visited Mental Health Clinics in the area two to three times per month. The PIC proved to be a valuable tool in the decision making process regarding referrals to Mental Health Clinics and the information the instrument provided was appreciated by the clinic intake worker.

Since the PIC authors had included scales said to measure cognitive and academically related abilities, it seemed to offer the opportunity for parent provided screening information in academic as well as personality related areas.

The authors of the PIC (Wirt, Lachar, Klinedeist, & Seat, 1977) had demonstrated the discriminate validity of the PIC in identifying children hospitalized with psychiatric disabilities and suggested the possible application of the PIC to settings outside psychiatric facilities. The authors stated that the future use of the PIC may involve use in schools as a screening device to determine the need for psychological evaluation or for determining the eligibility for Special Educational services.

The advantages discussed above in using the PIC in the psychiatric referral screening process were considered to be attractive features for a Special Education screening instrument.

The current research, then, grew from the practical problem of a rural school division faced with the need to screen children who were experiencing academic difficulties.

Purpose of the Study

The purpose of the study is to determine whether parent provided personality information is useful in school based screening for educationally handicapped students. This study attempts to determine whether the Personality Inventory for Children is valid for use as a screening instrument for the psychological evaluation of students with special needs. The following issues are raised in order to examine validity of the PIC in an educational setting.

Of primary interest is the issue of whether students enrolled in Special Education classes be differentiated from students enrolled in regular classes on the basis of PIC scores. Do the various PIC clinical, screening, and experimental scale scores discriminate among elementary

Learning Disabled, Educable Mentally Handicapped and non-handicapped students in regular classes?

A second focus of the study related to the validity question is the relationship between the various PIC scales with traditional measures of school achievement and adjustment. Is there evidence of external validity of the PIC? Does the information provided by parents on the PIC correlate with school obtained measures of intelligence, and academic achievement? Does the PIC Cognitive Triad (Intelligence Screening, Achievement, and Development scales) correlate with the Otis-Lennon Mental Abilities Test, The Wechsler Scale for Children-Revised (WISC-R) and the Canadian Achievement Tests? Does the information provided by parents on the PIC correlate with a teacher provided measures of classroom adjustment: Do parallel scales of the PIC correlate with the factor scales of the Walker Problem Behavior Identification Checklist?

A secondary focus of the study is to determine whether there is support for the position that Special Education students have unique personality traits that separate them from non-educationally handicapped students. Do Learning Disabled and Special Needs students present a personality profile different from students enrolled in regular class programs? Do Learning Disabled and Special Needs students present personality profiles which differentiate them from each other? Can these differentiations be made on the basis of behavioral inventories completed by parents and teachers?

A final focus is the question of the validity of using the PIC with a Canadian population. Are the published norms from one urban U.S. geographical region collected between 1958 and 1962 within the same range as those for non-clincially referred rural Alberta students?

Definition of Terms

This section describes the educational and psychodiagnostic makeup of the three experimental groups in the current investigation. The terminology reflects Yellowhead School Division's educational classifications.

Special Needs Students Students enrolled in Special Needs classes are provided small group instruction in the Alberta Provincial Educable Mentally Handicapped Curriculum or are provided individualized academic assistance and life skills training. Special Needs students are defined as those students who could not cope full-time in the regular class with only resource room support. Admission criteria for this program excluded behavior disorders as the primary referral problem. Admission to the program requires assessment and recommendation by the division psychologist. All students attended Special Needs classes at least half of their instructional day.

Resource Students Students formally enrolled in Resource programs are provided individual and small group remediation and academic support services through diagnostic teaching procedures. Typically students attend Resource programs for help with reading and language related problems at least two instructional periods per week. Services are primarily offered but not limited to reading disabled students. Referral is through assessment and recommendation of the divisional psychologist. Admission requirements for reading problem referrals are that the student has scored below the 10th percentile in reading on a Peabody Individual Achievement Test and below the tenth percentile on the Woodcock Reading Mastery Tests. All Resource students in the study were screened by the Alberta West Central Health Unit for vision and hearing problems, it was determined that academic delays were not due to vision or hearing problems.

Regular Class Placement Students Regular Class students are defined as those students who met all of the following criteria, the student: 1) had never received Special Education services 2) did not present severe emotional/behavior problems 3) had never repeated a grade 4) spoke English as the first language.

CHAPTER II

Issues in Psychoeducational Testing and Diagnosis

This chapter reviews important issues in the testing and classification of children of who may require Special Education services. The issues of labelling of children, problems in the classification system itself, and problems with the measurement of children's intelligence and personality are presented. Then, current behavioral and personality assessment strategies are evaluated for their application in the educational decision making process. The evaluation is presented as an introduction to the selection of the Personality Inventory for Children as a candidate for study in the educational screening process.

Labeling

It is important to consider the potential outcomes of the testing process, particularly in a study which investigates ways of improving the process. There has been a debate about one potential outcome, the labelling of a child. There has been a great deal written about the detrimental effects of labelling a child with a label such as "mentally retarded".

Labelling has been opposed because historically it meant the exclusion of special needs children from mainstream education (Wolfensberger, 1972). Educational testing of minority group children has been opposed because the process has been demonstrated to be discriminatory against minority group children. Minority group children have been incorrectly labelled and are disproportionately represented in Special Education classes.

MacMillan, Jones, & Aloia (1974) reviewed the research on the issue of the label "mentally retarded". They concluded that there were no studies which provided support for the position that labelling has long lasting and devastating effects on those being labelled. MacMillian et. al. (1974) do report, however, that it is the position of most Special Educators that labeling seems to have a detrimental effect.

Labeling and classification are interactive issues, but they are separable issues (Begab, 1975). Classification systems are primarily used to provide precise information about prevalence and characteristics of groups. In contrast, labelling is considered a highly individual process which takes place though personal encounter.

Researchers such as Achenbach (1978) argue that in order to improve the diagnostic process, conceptual categories which specify identifiable groups must exist to guide further research and development. Quay (1979) suggests that in many fields the progress of the discipline is related to the scientist's increased precision in describing and classifying entities or events.

Writers such as Hobbs (1975) point out that the classifying system may contain negative effects, but the stigmatizing effects of labels and self fulfilling prophecies which may exist are minimized by a careful determination of diagnostic category.

The anti-classification position, advocated by such writers as Reynolds and Balow (1972), has had influence on current educational practice. Some jurisdictions such as the Province of Alberta do not require formal classification as a precondition to providing special education funding. Other jurisdictions, however, are legally committed to categorical labelling before funding is provided.

Whether or not school jurisdictions are required to use categorical assignments in order to procure funding for special needs children, they still consider it relevant to conduct assessments to identify and program for children with special needs. The trend a way from segregation and labeling has not eliminated the need for an accurate assessment of children with special needs.

The result of a psychoeducational assessment can be an individualized program for a child with special needs. The result does not have to be a categorical label and a segregated placement. In addition, if parents become an integral part of the assessment and placement process, one might predict a reduction in the number of complaints about the process. Special educators consider it crucial to have information about a student's educational classification in order to plan the best program for the student.

Educational Classifications

The greatest difficulty school psychologists have in classifying students is when they assess students with mild educationally handicapping conditions. Severely handicapped students are often correctly identified before they reach school age, while students with mild educational handicaps are often not identified until the second grade or later.

The classification of Educable Mentally Handicapped or Mild Mental Retardation is a diagnosis of Mental Deficiency. This diagnosis according to the American

Association on Mental Deficiency is based on the measurement of significantly subaverage (two standard deviations or more) intelligence as tested on standardized I.Q. tests (Grossman, 1973). In addition, this deficiency in intelligence must also be accompanied by significantly subaverage social competency as assessed by clinical observation and Adaptive Behavior instruments. This condition must also occur during the developmental period.

At present there is no universal classification scheme for the educational classification of Behavior Disordered or Emotionally Disturbed children. Although numerous behavioral and objective personality instruments are available, class assignment appears to be based primarily on teacher and educational psychologist nomination. Special Education programs and services for behaviorally or emotionally disturbed children vary both within jurisdictions and between jurisdictions.

The classification for the category of Learning Disabilities is the most controversial of all the Special Education classifications. Numerous definitions still abound in North America. For the purposes of U.S. federal funding as defined in the Elementary and Secondary Education Act of 1970, Learning Disability is defined as:

> "Children with specific learning disabilities are those who have a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. Such disorders include such conditions or perceptual handicaps as brain injury, dyslexia, and developmental aphasia. Such term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or environmental disadvantage."

As a response to serious scientific challenge and the numerous proposed definitions, the U.S. Congress has limited the number of "handicapped students" it will federally recognize (fund and advocate for) by legislating a maximum percentage of students to be considered for Special Education categorization and legislative protection.

Chalfant and Scheffelin (1969) have published a processing theory orientated definition of the Learning Disabled as those who "have central processing dysfunctions which interfere directly with certain types of learning". Investigators such as Rourke (1985) have operationally defined the Learning Disabled for research purposes as those who have been assessed as presenting:

1) Wechsler I.Q. over 85 and less than 115.
2) Percentile score of less than 25% on at least one Wide Range Achievement Subtest.
3) No hearing loss of more than 30 db in either ear within the speech range.
4) Vision normal with or without corrective lenses.
5) No treatment or treatment referral for emotional

disturbance.
6) No suspicion of socioeconomic deprivation as defined by Children's Aide Society report or report from the referring agent.
7) English as the home language.
8) Continuous school enrollment since at least 6 years

Reviewers such as Applebee (1971) and Porter and Rourke (1985) point out that reading retardation research has not produced a good operational definition of Learning Disabilities. Unfortunately, the lack of an operational definition has created a serious methodological flaw. It appears that even where researchers have operationally defined the inclusionary criteria for subject selection there is little consistency in criteria across studies (Porter and Rourke, 1985).

In spite of the problems discussed above in the educational classification of children with mild educational handicaps, Special Educators continue to conceive of each educational category as distinct and separate with important implications for educational interventions (Forness, 1976).

It is important, then, to assess whether children differ according to certain patterns of cognitive and emotional factors. An assessment of these variables would seem salient when planning individual educational programs for children who have been referred for academically related problems. The following section discusses problems in the assessment process.

Problems in Differential Diagnosis

The above review of several of the mildly handicapping educational diagnoses highlights the need to assess both intelligence and behavior in arriving at an appropriate classification. Current educational assessment techniques of intelligence involve the use of psychometrically sound measures of cognitive ability such as the Wechsler Intelligence Scale for Children-Revised (WISC-R), (Wechsler, 1974). Clinical judgement and subscale analysis are methods used by school psychologists in arriving at a designator category.

In spite of the use of psychometrically sound instruments, the results of studies conducted over the past several years suggest that psychologists find it extremely difficult to reliably and meaningfully classify children into such categories as Emotionally Disturbed, Learning Disabled, and Educable Mentally Handicapped (Huelsman, 1970; Bryan & Bryan, 1976; Hallahan & Kauffman, 1977; Downey, 1979).

Studies that have examined the reliability of judgements made by school psychologists have shown that there is little interclincian agreement of diagnostic labels (Peterson & Hart, 1978, 1979; McDermott, 1980).

The psychologist's ability to correctly classify children does not increase with the number of tests administered (Sines, 1959) or with the psychologist's years of professional experience and level of training (McDermott, 1980).

Most researchers agree that psychologists tend to disagree when assigning diagnostic labels (Frame, 1979). The unreliability of judgements is often attributed to the inconsistent application of criteria in rendering diagnoses; however, others have pointed to the lack of standardized, operational definitions that will reliably and meaningfully differentiate children in Special Education categories (Hammill, 1976).

While I.Q. and achievement cutoffs can be operationally defined for some Special Educational categories, the requirement for behavioral and personality measures complicates the differential diagnosis process. The measurement and documentation of emotional status is necessarily implied by the inclusionary criteria for emotional problems (behavior problems) and the exclusionary criteria for the Mentally Handicapped and Learning Disabled classifications.

Perhaps the major difficulty in differentiating the mildly handicapped classifications from each other lies in the similarity in behavioral and personality characteristics of the students in these categories. Hallahan and Kauffman (1977) found that children classified as Emotionally Disturbed, Learning Disabled, and Educable Mentally Handicapped shared more similarities than differences. No patterns of behavior distinctly characterized any of the groups and all shared academic difficulties.

The following section reviews currently available strategies for assessing behavior and personality in children with an emphasis on evaluating their use in school settings.

Assessment Strategies

It can been seen from the above review of the problems in the current measurement of personality and behavior that there is a need for more precision in the arriving at an educational diagnosis. This section discusses and evaluates the personality and behavioral assessment strategies currently available. These approaches are reviewed in order to determine which strategy might best assist in the educational decision making process. The classification system as it applies to the educational assessment for children has been reviewed by DeKrey (1982) and describes four differing approaches.

Projective Techniques Although there are psychometrically sound measures for evaluating relatively small differences in cognitive abilities, personality assessment usually involves less reliable and valid instruments such as projective techniques (Anastasi, 1976).

The projective testing method is deeply rooted in psychodynamic theory of Sigmond Freud (Mischel, 1971). A vague stimulus is presented and the client is requested to provide a response. The assumption of the approach is that the individual's unique responses assist the therapist in determining subconscious motives which predict the client's subsequent behavior. After the examiner has analyzed the responses according to his or her psychodynamic orientation and has discovered the characteristics that describe the individual, the therapist then attempts to describe the motivational determinants of the individual's subsequent behavior (Mischel, 1968). Another basic assumption of this approach, called the "traditional approach" is that traits exist independent of situational variations.

Validity studies have generally demonstrated the failure of projective techniques to predict subsequent behavior (Murnstein, 1963; Zubin, Eron, & Schumer, 1965). Bardon and Bennett (1974) have stated that the applied use of projective assessment for educational purposes has all but vanished.

In addition to the problems discussed above, projective techniques are very costly in terms of administration, scoring, and interpretation (O'Leary & Johnson, 1979). The future use of projective techniques in assessing behavior and personality in school settings does not appear promising.

Objective Personality Techniques The personality tests outlined under this category are based on trait theory. The basic assumption of trait theory is that people display generalized modes of behavior that can be predicted from a restricted sampling of responses.

The assessment procedure for this approach usually involves the client completing a written questionnaire. The procedure allows for a self reporting of answers to a variety of personal questions (Mischel, 1968). The individual item answers are then grouped according to the personality traits they are said to represent.

According to Guilford (1959) individuals are assumed to share levels of specific traits or attributes. Testing is intended to show the degree to which these traits are attributed to the specific individual. The individual's responses are contrasted to a norm group to decide how different or similar the responses are. Knowledge about an individual's traits is considered essential in predicting future behavior.

The usefulness and adequacy of objective personality techniques is dependant on the initial criteria describing each of the criterion group. Critics of this approach to personality assessment point out a lack of reliability involved in the initial group diagnosis for the criterion group (Ullmann & Krasner, 1969; Goldfried & Kent, 1972; Achenback, 1978).

Another problem suggested by Goldfried and Kent (1972) is the inadequacy of response sampling for any given personality questionnaire. The adequacy of items is basically determined by each client's background and guidelines for assisting item selection are rarely provided.

The Minnesota Multiphasic Personality Inventory (MMPI) is perhaps the foremost example of the Objective Personality Technique (Hathaway & McKinley, 1951). The MMPI is restricted to adults and adolescents above 16 years. Researchers have attempted to utilize a similar approach for children (Sines, Pauker, Sines, & Owen, 1969). There are other children's personality assessments of this model such as the Personal Adjustment Inventory by (Rogers 1931); the Children's Manifest Anxiety Scale (Castenada, McCandles, & Palermo, 1956); the Junior Eysenck Personality Inventory (Eysenck, 1965) and the IPAT Children's Personality Questionnaire (Porter & Cattell, 1968).

Most objective personality measures have been based on adult psychopathology and depend on competence of the respondent to read, understand and complete a written form. Children's ability to supply reliable self reports has been questioned.

According to Bardon and Bennet (1974) the results of objective tests when given to children are neither definitive nor helpful. Mowder (1980) suggests that there is no currently acceptable method for the assessment of behavior and personality in children.

According to Wirt & Lachar (1981) all of the available assessment instruments have difficulties such as poor predictive power, too few items to assure reliability and an over emphasis on specialized groups. The use of self report inventories for children is also limited by the child's ability to read, understand, and complete a written form (Wirt, Lachar, Kleindinst, & Seat, 1977).

These limitations do not lend support for the use of Objective Personality Techniques with children in educational settings.

Direct Behavioral Observation A major advantage of direct behavioral observation is the assessment of the behavior in the setting of concern (Keller, 1980). This approach requires the presence of a unbiased observer to record interactions or target behaviors in specified situations.

Behavior observation when used to assess personality in children minimizes the need to make inferences from the measure to behavior (Cronbach, 1956). The ability of this technique to maximize the similarity between a criterion measure and the test behavior is unequaled by any other technique (Goldfried & Kent, 1972; Keller, 1980).

Critics of direct observation point out that often only unique and unrepresentative samples of behavior are emphasized (Meyers, Martin, & Hyman, 1977). Other reviewers such as Novick, Rosenfeld, Block, and Davidson (1966) challenge the application of the Behavioral Observation Method due to observer effects and the inadequacy of the behavioral samples. Fitzgerald (1979) comments on the need for larger samples suggesting that with fewer than five days of observation, there cannot be true confidence that the data accurately represents true or average behavior.

There appears to be general agreement from a scientific viewpoint that Direct Behavioral Observation is the best technique to predict subsequent behavior in the classroom. Unfortunately, the appropriate use of this technique may require trained observers, reliability checks, and at least five days of sampled behavior.

Although application of this procedure has received wide support (Alessi, 1980), the inefficiency of its application has greatly restricted its usefulness in educational settings. As "the" single approach to personality assessment of a child experiencing academic difficulties, direct behavioral assessment is of very limited value.

Indirect Empirical Personality Techniques Due to developments in the methodology of test construction, new techniques for objectively assessing personality and behavior have been developed. These techniques employ indirect respondents such as parents. In contrast to rating scales, these measures utilize empirically derived scales to interpret the meaning of children's behavior. The decisions about which dimensions of child behavior to assess and what items might accurately represent these dimensions are based on empirical research. A rational approach is used as opposed to deriving questions from any particular theory of personality or child development.

One of the first available measures employing the indirect respondent method with children was developed by Dreyer, Lewis, Rich, Miller, Reid, Overlade, Taffel, & Flemming (1964). These researchers developed an inventory which contained 142 items answered by the parent. This pioneering effort marked the beginning of a methodology utilizing a system of factors and empirically derived clusters.

Achenbach (1978) has utilized similar techniques in devising a parent completed questionnaire to assess child behavior problems. Achenbach identified two primary bipolar factors of internalizing and externalizing. He also describes nine different behavior (or personality) clusters. The Personality Inventory for Children which is used in this study utilizes a more empirical approach through the use of criterion groups for validation.

Unlike Direct Behavioral Observation which is favorably accepted but inefficient as an assessment procedure, Indirect Empirical Personality Technique approaches have been criticized for depending upon indirect report which may include biases or response sets. Block (1965) has demonstrated that such biases tend to be systematic and therefore can be taken into account in scale construction.

Lachar (1982) holds that research into informant distortion indicates that it is not, in general, a major problem. He points to the use of validity scales and other specific methods in test construction which evaluate and control for systematic bias in informant response style. Secondly he argues where response bias does occur, it is clinically significant because it assists in understanding family dynamics.

An Indirect Empirical Personality Technique was chosen for use in the current study because of the advantages of efficiency of data collection and because it involves the parent in the assessment process. The advantages and limitations of this type of assessment are further described in the following chapter which provides an overview of the Personality Inventory for Children.

CHAPTER III

Overview and Description of the Personality Inventory for Children

This chapter presents the Personality Inventory for Children (PIC). First the PIC's scale development and description are presented, then studies of the PIC's reliability and validity are reviewed, and finally previous research using the PIC in educational applications is reviewed.

Description of the PIC

The Personality Inventory for Children (PIC) is an indirect empirical personality inventory which seeks to provide comprehensive and clinically relevant descriptions of children and adolescent personalities (Wirt, Lachar, Klinedinst, & Seat, 1977). The PIC consists of 600 items and can be scored for 16 profile scales and 17 supplemental (experimental) scales. The P.I.C. scales are briefly described below:

Validity Scales.

The Lie (L) Scale is a 15 item scale intended to identify an informant's tendency to deny common occurring childhood problems and ascribe the most virtuous behaviors to the child (Seat & Wirt, 1973).

The F (F) Scale is a 42 item scale developed to target deviant response sets such as the exaggeration of symptoms or randomness in responding (Seat, 1971).

The Defensiveness (DEF) Scale is a 23 item scale written to determine a respondent's tendency to be defensive about the designated child's behavior. Inter scale correlates suggest that the DEF scale is negatively related to the informant's expressing negative attributes, particularly those that are interpersonal (Meyers, 1974).

The Screening Scale.

The Adjustment (ADJ) Scale is a 76 item scale constructed as a screening device to identify general adjustment problems and serves as an indicator of those children in need of further psychological evaluation (Seat, 1969).

The Clinical Scales.

The Achievement (ACH) Scale consists of 31 items. The scale was designed to identify children who are significantly below age expectancy in their academic achievement, regardless of their potential to achieve at an age appropriate level (Lachar, 1974).

The Intellectual Screening (IS) Scale is a 25 item scale intended to identify a child with impaired intellectual functioning and in need of further evaluation (Froman 1973).

The Development (DVL) Scale is a 25 item scale designed to identify weaknesses in intellectual and physical development which may be reflected in poor classroom performance (Klinedinst, 1972, 1975).

The Somantic Concern (SOM) Scale is a 40 item scale which identifies reoccurring concern with physical symptomatology (Klinedinst, 1972, 1975).

The Depression (D) Scale is a 46 item scale which reflects childhood depression and measures its importance as a component of psychological disturbance (Froman, 1971).

The Family Relations (FAM) Scale consists of 35 items which measure family effectiveness and cohesion (Klinedinst, 1972, 1975).

The Delinquency Scale (DLQ) is a 47 item scale intended to measure tendencies toward delinquent behavior (Lachar, Abato, & Wirt, 1975).

The Withdrawal (WDL) Scale is a 25 items scale designed to identify children who are withdrawn from social interactions (Klinedinst, 1972, 1975).

The Anxiety (ANX) Scale is a 30 item scale which was developed to measure symptoms of anxiety , including a low threshold for frustration, exaggeration of problems, irrational fears and worries, nightmares and behavioral as well as psychological correlates of anxiety (Klinedinst, 1972, 1975).

The Psychosis (PSY) Scale is a 40 item scale constructed to discriminate psychotic children from normal , behaviorally disturbed, nonpsychotic , and retarded children (Lachar, 1971).

The Hyperactivity (HPR) Scale is a 36 item scale intended to identify children whose behaviors are frequently associated with the "hyperkinetic syndrome" (Hegeman, 1976).

The Social Skills (SSK) Scale consists of 30 items designed to reflect effectiveness in social relations and the reasons for a lack of social interaction (Klinedinst, 1972, 1975).

The Experimental (Supplemental) Scales.

The following 17 scales are not included in the standard administration of the PIC because information currently available cast some doubt on their ability to perform the designated tasks, or because sufficient information is not available to support their clinical utility (Lachar, 1984).

The Adolescent Maladjustment (AGM) Scale is a 52 item screening scale developed to identify emotional disturbance in children (Carten, 1974).

The Aggression (AGN) Scale is developed rationally consisting of 25 items that were nominated to reflect unsocialized, maladaptive aggression (Klinedinst 1972, 1975).

The Asocial Behavior (ASO) Scale is a 30 item rationally developed scale which contains items judged to reflect dimensions of antisocial behavior (Klinedinst 1972, 1975).

The Cerebral Dysfunction (CDY) Scale is a 48 item scale designed to differentiate children with behavior problems related to cerebral dysfunction from normal children, behavior disordered children who show no neurological dysfunction, and mentally retarded children (Louick, 1971).

The Delinquency Prediction (DP) Scale is a 71 item scale constructed to identify children at risk for delinquency (Hampton, 1970).

The Ego Strength (ES) Scale is a 66 item scale designed to identify extremely adjusted children or attributes conductive to good adjustment in a school setting (Kassel, 1971).

The Excitement (EXC) Scale is a rationally developed scale which contains 15 items which were nominated by judges to indicate the characteristics of poor frustration tolerance, distractibility, restlessness, irritability, emotional lability, and motor agitation as well as symptoms such as screaming and destructiveness (Klinedinst 1972, 1975).

The Externalization (EXT) and Internalization (INT) Scales were developed to measure a tendency to overinhibit (neurotic traits) contrasted with a tendency to express impulses against society (conduct disorder) (Seat, 1971).

The Infrequency (INF) Scale is a 13 item scale that contains those items that are extremely skewed in their response distribution for both normal and abnormal samples. This scale was designed to identify invalid protocols resulting from atypical response sets (Seat, 1971).

The Introversion - Extroversion (IE) Scale is a 47 item scale which was constructed to determine a child's social orientation pattern (Hayes, 1971).

The K (K) Scale is a 28 item scale which consists of those items added by the Darlington procedure to other face valid items that distinguished normative from psychiatrically disturbed boys. It appears to have the characteristics of a moderator variable (Seat 1971)

The Learning Disabilities Prediction (LDP) Scale is a 61 item prediction scale which was constructed to identify children 6 to 9 years who were later considered to be learning disabled (Peverill 1970).

The Reality Distortion (RDS) Scale is a rationally derived scale of 25 items which were nominated as describing behaviors that are suggestive of impaired reality testing (Klinedinst 1972, 1975).

The Sex Role (SR) Scale is a 37 item scale developed to study the constructs of masculinity and femininity (Bielefeld, 1972).

The Social Desirability (SD) Scale is a 50 item scale designed to measure the degree of socially desirability response set present in the inventory (Guglielmi, 1973).

The Somatization (SM) Scale is a 40 item scale designed to measure the degree to which psychological stress is responded to by developing physical disabilities (Stewart, 1971).

The inventory is an indirect approach to assessment because it is completed by a secondary respondent, usually the mother. The informant's perceptions of the child under study are intended to aid in the diagnoses and treatment of the child, as well as the early identification of developing patterns of problem behavior.

Development of the Personality Inventory for Children

Two methodologies were used to select inventory items. Wirt, Lachar, Klinedinst, & Seat (1977) label these methodologies empirical and rational. The empirical scale development was based on the appropriate use of criterion groups and normal contrast groups . Items were administered to the criterion and normal groups, and those items that differentiated between the two groups were included. In addition, the Darlington method (Darlington & Bishop, 1966) of scale construction was used to obtain optimum scale validity. This was accomplished by making possible the use of all items in the item pools according to iteration validity comparisons. The empirically derived scales consist of two validity scales (F and Defensiveness), one screening scale (Adjustment), and five clinical scales (Achievement, Intellectual Screening, Delinquency, Psychosis and Hyperactivity Scales).

The scales constructed using the rational methodology were constructed using content oriented and internal consistency methods. Twelve experimental judges nominated items from the PIC item pool, with each judge choosing items for three scales. The criteria for item inclusion was that the item had to be selected by nine of the judges as measuring the content of the specific scale and the item had to be keyed in the same direction by at least eight of the judges. The rationally derived scales consist of one validity (Lie) and seven clinical scales (Development, Somantic Concerns, Depression, Family Relations, Withdrawal, Anxiety, and Social Skills).

Wirt, Seat, and Broen (1977) have pointed out that the profile scales which include three validity, one screening, and 12 clinical scales have greater usefulness for clinical application. The supplemental scales have been shown to be less psychometrically sound and require further research.

The supplemental scales consist of Adolescent Maladjustment, Aggression, Asocial Behavior, Cerebral Dysfunction, Delinquency Prediction, Ego Strength, Excitement, Externalization, Internalization, Infrequency, Introversion-Extroversion, K, Learning Disabilities Prediction, Reality Distortion, Sex Role, Social Desirability, and Somatization.

Reliability Studies of the PIC

The reliability of a test can be defined as the correlation between two parallel tests. Wirt, Lachar, Kleindinst, and Seat (1977) have documented the reliability of the PIC with clinical and normal samples. Test-retest reliability of PIC was estimated in a clinical population with mothers of 34 children at the

Layfayette Clinic Out Patient Service in Detroit who completed two PIC's. The time between administrations ranged from 4 to 72 days with an average of 15.2 days. The correlations between administrations yielded an average reliability coefficient of .86 for the 16 profile scales and an average of .89 for the clinical scales only.

Estimates of scale reliability with normal populations were obtained in two studies. A study in Michigan had mothers complete two PIC's on 46 children. The time between administrations ranged between 13 and 102 days with the average time being 50.9 days. The average test-retest reliability coefficient for the profile scales was .71.

A second study of 55 children in Pennsylvania had mothers complete two PIC's on their children two weeks apart. The average reliability coefficient for the profile scales was .89

The research suggests that the PIC profile scales demonstrate sufficient stability across time to allow for the measurements use in the individual assessment of children.

Studies Examining the Validity of the PIC

Wirt, Lachar, Kleindinst, and Seat (1977) document that validity has been shown for a number of scales (ADJ, ACH, IS, PSY, and HPR) in the initial stages of scale construction. Patterns of PIC responses were effective in normative-criterion group separation. The patterns of PIC responses have shown consistency in cross validation using standardized intelligence tests and teacher ratings.

Several studies published since the manual have shown support for the validity of the PIC. Most of these studies sought to determine the clinical utility of the instrument and, and while doing so, showed findings of the PIC scale construct validity (Clarke, 1982).

Construct Validity. Construct validity is determined by investigating what psychological qualities a test measures; i.e., by determining the degree to which certain explanatory concepts or constructs account for performance on the test. Criterion-related (predictive) validation accompanies test scores, or predictions made from them, with an external variable (criterion) considered to provide a direct measure of the characteristic or behavior in question (American Psychological Association, 1974).

Lachar, Butkus, and Hryhorczuk (1978) investigated the diagnostic potential of the PIC at the Layfayette Clinic by determining the external correlates of the profile scales. Behavioral checklists were completed on a total of 79 children with a wide range of symptomatology except psychosis, and on children with no psychiatric illness. The average age was 9 years 8 months.

Two clinicians reviewed half of the sample's medical records without PIC information in order to fill out a 94 item behavioral checklist. Interclinician agreement was determined to be greater than 85%.

PIC's were completed by the children's mothers. Correlations were computed for each PIC profile scale and behavior checklist item. The following PIC Correlates were found to be the most robust:

(1) at least one year of academic delay with Achievement

(2) below average intellectual functioning with Intelligence Screening

(3) at least one year of academic delay and below intellectual functioning with Development

(4) places blame on others with Somatic Concern

(5) few or no friends, complaints of peer hostility, and fights with siblings with Depression

(6) father as strict disciplinarian, is alcoholic or substance abuser, and is emotional disturbed with Family Relations

(7) places blame on others and disobeys parents with Development

(8) unrealistic fears and has few friends with Withdrawal

(9) manifests tense, anxious, nervous and restless behavior with Anxiety.

(10) seldom communicates, with Psychosis

(11) active or agitated, prior stimulant therapy with Hyperactvity

(12) suicidal thought and/or self destructive behaviors and has few friends with Socialization

The authors suggest that the scales with few external correlates may reflect infrequent symptomatology in the sample (SOM, PSY), an insufficient number of certain types of items on the checklist (ACH, IS, DVL), and a lack of reliable documentation of parent attitudes in medical records for relating the information to the pertinent scale (DEF). The profile scales yielded theoretically consistent results which demonstrate convergent validity in addition to providing clinical support for the clinical utility of the instrument.

Lachar and Gdowski (1979) studied a sample of 430 children and adolescents between the ages of 2 and 17 years. Most of the subjects were in the low socioeconomic category based on education and head of household occupation. The children had been referred to the Layfayette clinic for psychiatric evaluation by various sources. The subjects' smptomatology varied.

Psychiatric residents with two to four years of training completed checklists about the children. Their judgements were based on information obtained on initial parent and teacher questionnaires, parent and child interviews, and supervisory contact made with other psychiatrists. Lachar and a fourth year resident independently evaluated 24 cases on a preliminary version of the evaluation form with interrater agreement of 87%.

Factor analysis of the checklist yielded 16 interpretable factors accounting for 78.5% of the common variance. Factors such as hostility, cognitive and neurological impairment, antisocial behavior, somantic symptoms, maternal criticism, psychotic disorganization, parent conflict, and sleep disturbance were identified. These factors were correlated with the PIC profile scales T scores. The resulting correlations provided substantial evidence for scale convergent and discriminant validity.

In this study discriminant validation of the PIC was conducted by examining problem behaviors that did not correlate with PIC scales. For example, higher scores on scales measuring externalizing and aggressive behaviors (DLQ and HPR) were not related to factors on the problem checklist which represented symptomatology indicating internalizing behavior (anxiety, depression, fearfulness).

Criterion Related Validity of the PIC. Gdowski (1978) studied the ability of the PIC to discriminate among relatively homogenous groups of disturbed children who were referred to the Layfayette Clinic.

Psychiatric residents evaluated 307 subjects aged 2 to 17 years on a 66 item checklist which assessed self concept, interpersonal relations, affect, physical development, cognitive development, and achievement.

The problem checklist was factor analyzed, and seven factors accounted for 69.7 of the common variance. These factors were then cluster analyzed which yielded eight homogenous groups of children according to the patterns of behavior shown in the factor analysis.

An analysis of variance was used to compare cluster groups with PIC profile scales to determine whether the PIC was sensitive to symptom patterns. All scales except the SOM scales differed significantly across the cluster groups indicating that the PIC could differentiate among relatively homogenous groups of disturbed children.

Dehorn, Lachar, and Gdowski (1979) studied the ability of the PIC to discriminate among homogenous groups of behavior disorder children. The sample of 2,946 children included the normative sample and six of the criterion groups used in scale construction.

The PICs were classified by two systems, normals and code type, and factor cluster. The profiles with all clinical scales having T-scores less than 70 were assigned to the normal group. A code system examining the high two T-scores grouped the remaining profiles. A factor cluster method further grouped the profile code types into six possible combinations of three main factors.

To determine whether each profile classification system significantly differed across the six criterion groups, a Chi-square was conducted. The results indicated that the code type classifications effectively separated the profiles of six criterion groups. These researchers interpreted the results to indicate individual code types of the PIC can identify conceptually meaningful differences across relatively homogenous clinical samples.

Cichon (1980) studied the ability of the PIC scales to screen for personality disturbances in children. Mothers completed PICs for 199 normal children and 65 children who were being evaluated for emotional disturbance. An analysis of variance resulted in significant differences between groups on 28 of the 33 scales. Socioeconomic differences were found on 14 scales, however the effect was less pronounced than group membership.

The ADJ scale produced a hit rate of 80% in identifying children in the emotionally disturbed group. The author suggested that the PIC may prove useful for screening emotional disturbance in children. However the sample was limited to preschool children.

Dollinger, Goh, and Cody (1984) assessed the criterion validity of the Cognitive Triad of the PIC (IS, ACH, DVL) scales within the PIC via correlations with the WISC-R. Parents completed PICs for 48 children who were seen at a university clinic for emotional or academic concerns. The correlation results suggested that the PIC has validity for screening children's cognitive abilities.

Lachar, Gdowski, and Snyder (1984) provided further evidence for the convergent and discriminant validity of the PIC. Extensive behavioral ratings of 691 children and adolescents were obtained on three criterion checklists completed by parents, teachers, and clinicians. Ratings on these forms were submitted to iterative common factor analysis with varimax rotation and yielded five, seven, and seven behavior problem dimensions on the criterion checklists. Twenty PIC T-scores were correlated with the problem behavior dimensions separately for male children, male adolescents, female children and female adolescents. The four broad band factor scale predicted 14 different generalized external dimensions, and the 16 profile scales predicted 16 different generalized external dimensions.

Studies of the PIC with Educationally Handicapped Students

Froman (1973) is credited with the development of the Mental Retardation Scale (RET) which was later termed the Intellectual Screening (IS) Scale. The IS scale was developed by contrasting the protocols of Mentally Handicapped individuals who were either in special classes or institutions with PIC profiles of subjects of normal intelligence. In a further investigation of the scale Froman was able to demonstrate that the PIC was able to differentiate among three levels of IQ below 69.

A 61 item Learning Disabilities Prediction Scale (LDP) was developed by Peverill (1970). Students were classified on the basis of the Iowa Test of Basic Skills, achievement test scores and teacher comments. Male and female Learning Disability and Non-Learning Disability groups were created. When the optimal cutting score of 25 was used both male and female groups were differentiated at over 80%.

Johnson (1971) divided 152 intellectually homogenous subjects into low and high achievement groups based on a learning disabilities battery consisting of 12 subtests. PIC's were obtained on all subjects and grouped into one of the two categories, and then submitted to a two way analysis of variance. The results suggested that the Low Achieving group was described by being more excitable, aggressive and asocial. They showed more reality distortion, had fewer social skills, and less satisfactory physical and intellectual development.

In a second study, Johnson and Shove (1971) utilized the PIC in an attempt to develop a test battery that would distinguish low achievers from high achievers. Low reading achievement boys were matched with an intellectually similar group of adequate readers. In addition to ACH difference between the groups, the underachieving readers demonstrated more abnormality in ADJ, IS, DVL and SSK, PSY,D, ANX, HPR and F.

Webb (1977) conducted a study to examine the ability of the PIC to differentiate groups of exceptional children according to differences in personality and adjustment. PICs were completed by 221 mothers of students aged 6 to 16 years. The teacher-identified groups of children consisted of students with the following classifications: Learning Disabled (23), Emotionally Disturbed (29), Mentally Retarded (6), Gifted (34), Culturally Deprived (10), and Normals (119).

Mothers completed the PIC, a socioeconomic information form and a 68 item behavior problem checklist. Teachers completed a behavior checklist and a classification form.

Webb found that within a number of teacher classifications there were one or more scale elevations of the PIC. No scale was elevated in the Learning Disabled Group, the Normal Group or the Gifted Group. Elevations of the DVL scale were found in the Mentally Handicapped group. The WDL, ANX, DVL, FAM, ASO, and RD scales were elevated in the Emotionally Disturbed group, and ASO, FAM, DVL scales for the Culturally Deprived group.

The PIC scales were significantly correlated with home and school behavioral checklists, but mothers reported more problems on the checklists than did the teachers. The author interpreted these results as indicating the value of using the PIC within schools systems.

Culbert and Gdowski (1982) conducted a study to determine whether the PIC scales could differentiate between a reading disabled group and a non-reading disabled group of children. The reading disabled group consisted of 12 males aged 8 to 9 years who had been identified as dyslexic (World Federation of Neurology Criteria) and attending reading disability classes. Non-reading disabled males were matched on the basis of Peabody Picture Vocabulary Test I.Q., Socioeconomic Status, age, race and handedness.

Parents completed the PIC and a WISC-R was administered. The results showed that the reading disabled group had higher PIC scale elevations on ADJ, ACH, IS, and the DVL scales. Correlations of PIC scales and WISC-R subtest scores and Verbal, Performance, and Full scale IQs revealed significant relations that clustered around the ADJ, ACH, IS, and DVL scales. Elevations on the ADJ, ACH, and DVL scales were correlated with WISC-R subtest scores on Arithmetic, Digit Span and Coding. Elevations on the ACH scale were also related to WISC-R subtest scores on Information, Similarities, and Vocabulary. The authors concluded that the data reflected the ability of the PIC to discriminate between the two groups.

Berman (1979) evaluated a Spanish version of the PIC with a sample of 23 school children experiencing behavioral and/or learning difficulties and a sample of 21 school children displaying no such difficulties. Parents completed the PICs and the teachers completed classroom behavior checklists. With the exception of the L, DEF, and HPR scales the PIC profile scales significantly differentiated the two groups of children. Correlates between the PIC and the teacher checklist data were found on the average of 8.8 for each scale.

DeKrey (1982) in a doctoral dissertation utilized a shortened version of the PIC (280 questions) which provides shortened versions of 14 of the Profile scales and excludes the Experimental scales. He assessed the validity of the Clinical scales to differentiate four Iowa Department of Education classifications: 1) Regular Education Placement, 2) Learning Disabled, 3) Mentally Handicapped, and 4) Emotional Disabled. All subjects studied were males. He found that the Regular Education group did not present any elevated mean profile scales. The Learning Disabled group (Iowa Education Criteria) was characterized by high scores on ADJ, ACH and DVL scales and a moderate inflation on the IS scale (T=68). The Mentally Disabled group was characterized by extremely elevated scores on the IS scale. The Emotionally Disabled group was characterized by interpretable scores on the HPR scale and Factor I. Some inflation was found for ADJ and ACH scales.

An examination of the subscale scores indicated that all three Special Education groups differed significantly from the Regular Education group on the ADJ, ACH, DVL, D and ANX scales.

In a doctoral dissertation Schnel (1982) examined the utility of the PIC in discriminating Learning Disabled students from regular education students. An 85% correct placement rate was achieved. When a second instrument, the Student Behavior Checklist was used in conjunction with the PIC an overall correct placement rate of 91% was achieved.

DeKrey, McCollum, & Martin (1983) reported that they have used a shortened version of the PIC, the PIC-R with exceptional children. 95 elementary school male subjects from Regular, Mentally Handicapped, Learning Disabled and Emotionally Disturbed classifications were identified at a rate of 83% when data from a discriminant analysis using all twenty PIC variables was analyzed.

Goh, Cody and Dollinger (1984) studied the PIC profiles of 60 children whose primary diagnoses by an interdisciplinary team at a university clinic were either Behavior Disordered or Learning Disabled. Statistical analysis indicated that the children could be differentiated on the basis of mean score comparison, profile analysis and discriminant analysis. Differences between the groups were found on those scales which comprised the Cognitive Development and Conduct Disorder Factors.

In another doctoral dissertation Murphy (1984) studied 179 elementary and junior high students referred by their school for psychoeducational assessment. Subjects were assigned to one of four groups: 1) Mentally Retarded, 2) Slow Learner, 3) Learning Disabled and 4) No Exceptionality, but referred for Special Education and did not qualify. Subjects were successfully discriminated into classifications with a success rate of 67%. These results were lower than those reported by Schnel (1982) and by Dekrey, McCollum, and Martin (1983) perhaps due to subject selection difference. The regular education (control group) in this study was comprised of students referred for Special Education who were tested but did not qualify. Murphy found that the Learning Disabled Group PIC profile did not differ from the No Exceptionalities group.

As in the case of Bennet and Welsh (1981), Murphy (1984) did not find the IS-ACH disparity useful in identifying the Learning Disabled group. The author suggested that the PIC should not be used to replace traditional IQ and achievement testing in the identification of Learning Disabilities. Slow Learners and the Mentally retarded groups were primarily differentiated by cognitive deficit on the Cognitive Triad (IS, DVL, ACH)

Harrington and Marks (1985) compared PIC scores on the Adjustment scale for 35 students enrolled in either Learning Disabled, Regular Education or Behavior Disorder classes. T-scores on the ADJ scale for the Behavior Disordered group was significantly higher than the other two groups. There was no significant difference on the ADJ scale for the Learning Disabled and Regular Education groups. In this study Learning Disabled subjects were enrolled in Learning Disability classes and demonstrated a significant difference in their academic achievement and learning expectancy as measured by I.Q. and achievement tests.

Porter and Rourke (1985) have shed some light on the conflicting results regarding the PIC's erratic record in identifying Learning Disabled children. They studied 100 students referred to a neuropsychological clinic because of learning problems. The children's mothers completed the PIC. Porter and Rourke's rigid subject selection criteria have been previously discussed above. When the group PIC profile was plotted, there did not appear to be any evidence suggesting that the Learning Disabled were at risk in any personality area, only the Intelligence Screening scale (IS) was elevated to a T-score over 70.

Further subtypal analysis indicated that the subject sample was comprised of four distinct personality profiles accounting for 69.5% of the common variance. Due to the operationally defined group membership consistent with statutory definitions of Learning Disability, it would appear that there may be no one Learning Disability profile.

Porter and Rourke point out that previous research has been inconsistent and inconclusive in attempts to identify a Learning Disability profile. They suggest this finding may be the result of the faulty assumption that there is one Learning Disability personality profile.

Summary

There is an increasing educational and legal impetus to identify children with special needs. There is a need to assess behavioral and emotional aspects of a child's development in addition to the traditional measurement of intelligence and achievement. Projective personality measures have little applicability to an educationally relevant assessment of child's personality. Authors such as Achenbach correctly identify behavioral approaches to the measurement of childhood personality as superior to objective personality testing. Unfortunately the process is too costly to be practical in educational settings.

Indirect empirical personality assessment while not as effective as behavioral approaches, is one approach that will continue to be employed because of its relative efficiency in the use of professional time.

Two studies have indicated that it is possible to fake good or bad responses on the PIC in conscious attempts to present one's child in a better or worse light to achieve a test result that would influence a decision such as a child qualifying for special services. It is not possible for a clinician to entirely rule out faking attempts. The three PIC validity scales, however, are used to help minimize and help interpret these attempts.

Although designed in a psychiatric setting, the PIC has features that make it attractive to educators. The involvement of the parent in the assessment process is consistent with the current Special Educational approach that emphasizes individual program planning involving the parent. The inclusion of cognitive and developmental scales in an indirect empirical personality assessment is an attractive feature for educators.

The PIC looks promising as an objective personality assessment with application to educational settings. It has been proven to be a valid and reliable instrument for the identification of disturbed children in psychiatric settings. Its authors suggest that it has application in educational settings because it combines behavioral indices with measures of intelligence and achievement.

A review of the educational use of the PIC indicates that it has potential for the identification of children classified as Mentally Handicapped (retarded). Several studies including children with behavioral-emotional problems have been successful in differentiating these children from other exceptional groups. Unfortunately no single pattern which differentiates this group emerges. PIC scale and broad band factor scores differ from study to study, perhaps reflecting the various criteria for subject selection.

PIC research attempting to identify children with Learning Disabilities has resulted in inconsistent and inconclusive evidence for a PIC Learning Disability profile. Porter and Rourke (1985) have offered an explanation of these results, hypothesizing that there is no one Learning Disability personality. They have identified several personality profile subtypes.

Interestingly, the bulk of the research on the PIC has been conducted by the authors and their students. Much of the educational literature consists of unpublished graduate research. The lack of consistent and discreet classification criteria raises some concern as to the external validity of a number of PIC studies.

Rationale for Current Investigation

The published validity evidence for the PIC confirms its application in the assessment of children in clinic and psychiatric settings. PIC results which have incorporated school information suggest that valid application in a school setting may be possible. The rigorousness of PIC construction and development is impressive, but its application in a school setting has not been adequately demonstrated.

The purpose of this study is to investigate the use of the Personality Inventory for Children in the identification of Special Education groups. Comparisons of the PIC and traditional measures of educational group identification are an important part of this investigation. Direct empirical comparisons have important theoretical as well as practical implications. On a theoretical level, intelligence and personality dimensions are hypothetical constructs. If a test reportedly measures a basic dimension, another test which also supposedly measures the same variable should be highly correlated. If these tests correlate despite their surface dissimilarity, one can place greater faith in the proposed theoretical interpretation. This demonstrates convergence and thus either test can be relied upon to measure the same thing. Likewise, scales which are supposedly measuring different constructs or dimensions should demonstrate divergence.

Achenbach (1981) has criticized the PIC for a lack of alternative validity criteria. He states that the original documentation for the instrument consists largely of unpublished studies of samples garnered from diverse sources under diverse conditions.

The issue of external validity is an important issue to be addressed in this study. Traditional measures of I.Q., achievement, and school adjustment were selected for comparison with the PIC. The Wechsler Intelligence Scale for Children, the Walker Problem Behavior Checklist, the Otis-Lennon Mental Ability Test, and the Canadian Achievement Tests were selected for comparison with appropriate PIC scales. These tests are presented in detail in the following chapter.

Personality dimensions and their relationship to educationally handicapping conditions in children is another area under investigation. The review of the literature has pointed out that there is more of a theoretical basis for a "handicapped" personality profile than there is an empirical basis. The proposed study should shed additional light on this question.

CHAPTER IV

Method

The procedures used to conduct this study are presented is this chapter. Questions under investigation and the method of data analysis are also presented.

The present study was conducted to determine whether parent provided information using the PIC is useful in screening students with Special Education needs. The study was also conducted to examine the PIC's relationship to more traditional measures of intelligence, achievement, and school adjustment.

Parents of students enrolled in the Yellowhead School Division's regular education and two types of Special Education classes were contacted and asked to complete the Personality Inventory for Children. Teachers of these students were asked to complete the Walker Problem Identification Checklist. File records of WISC-R, Canadian Achievement Tests, and the Otis-Lennon test were collected.

Analyses were conducted to determine whether the PIC is able to differentiate Special Education students from Regular Education students and to determine the PIC's relationship to traditional educational tests.

Subjects

The subjects participating in the study were students enrolled in the Yellowhead School Division schools. The school division is a public school division located in west central Alberta. It consists of approximately 5,000 students served in 17 schools covering an area of over 4,000 square miles. Two population centers in two towns account for the majority of the student population. Resource based industries in petroleum, coal mining, and forestry are the economic base of the area. Farming, ranching and tourism contribute to this economic base.

The 52 participating subjects consisted of 17 students enrolled in Special Needs programs, 18 Learning Disabled students enrolled in regular classes receiving resource room assistance, and 17 students enrolled in regular classes. Subject demographics including sex, age, WISC-R IQ, and Otis-Lennon DIQ are presented by group in Table 1. English as a second language students receiving Special Education assistance were excluded from the study. Subjects enrolled in Special Needs classes are provided small group instruction in the Province of Alberta Educable Mentally Handicapped Curriculum. As shown in Table 1 the mean full scale Weschler I.Q. for this group is 74.4. Special Needs students are integrated into all non-academic areas of school life and some

Table 1

Subject Demographics by Group: Age, Sex, WISC-R, Otis-Lennon DIQ, and Canadian Achievement Tests

	Special Needs	Resource Room	Regular Class
Number of Subjects	17	18	18
Male/Female Ratio	10/7	17/1	12/6
Mean Age in Years	10.5	10.9	10.5
Age S.D.	1.4	1.7	1.6
Mean WISC-R VIQ	73.5	95.9	NA
Mean WISC-R PIQ	80.5	102.1	NA
Mean WISC-R FSIQ	74.4	97.3	NA
Mean Otis-Lennon DIQ	78.1	95.0	114.7*
	n=15	n=13	n=14

n = number of subjects

S.D. = standard deviation

VIQ = verbal intelligence quotient

PIQ = performance intelligence quotient

FSIQ = full scale intelligence quotient

students integrate as much as one half of their time within a regular classroom during periods in which there is less emphasis on academic instruction. Students also receive assistance in the regular Province of Alberta curriculum and receive life skills training.

Special Needs students are defined as those students who cannot cope with full-time placement in the regular class with only resource room support. Approximately one third of the students enrolled in Special Needs classes would meet A.A.M.D. diagnostic criteria of the Educable Mentally Handicapped classification, the other two thirds would not be classified as Mentally Handicapped but would fall in the Borderline classification of intelligence. Less than two percent of the Yellowhead School Division's students are enrolled in Special Needs classes. Trainable Mentally Handicapped and Dependent Handicapped Students are served in separate programs. Admission criteria for this program excludes behavior disorders as the primary referral problem. Admission criteria require formal assessment and recommendation for placement by the school psychologist.

Subjects enrolled in Resource programs are provided individual and small group remediation and academic support services through diagnostic and compensatory teaching procedures. As shown in Table 1 the mean

Wechsler full scale I.Q. for this group is 97.3 which falls within the average range of intellectual abilities. All subjects in the Resource group attended resource for help with reading and language related problems at least two instructional periods per week. Services are primarily offered to, but not limited to reading disabled students. Referral is through an assessment and recommendation by the school psychologist. Admission requirements for reading problem referrals state that the student has scored below the 10th percentile in reading on a Peabody Individual Achievement Test and below the tenth percentile on the Woodcock Reading Mastery Tests. All students from both Special Education groups had been screened by the Alberta West Central Health Unit for vision and hearing problems.

The Regular Class group consisted of students matched for age from the same schools as the Resource and Special Needs students. The Regular Class students were selected by classroom teacher nomination from a randomly ordered class list. The teacher was asked to check off the names of those students who met all of the following criteria: 1) the student had never received Special Education services, 2) did not present "severe" emotional/behavior problems, 3) had never repeated a grade, and 4) spoke English as the first language.

All of the students had been assessed by their teachers with the Walker Problem Behavior Checklist, and their parents completed the PIC. Some of the students had been routinely assessed with some of the following instruments.

Instruments

To assist in examining the external validity of the PIC, traditional measures of intelligence, adjustment, and achievement were administered or collected.

The Personality Inventory for Children and the Walker Problem Behavior Identification Checklist were administered in the current investigation. The Wechsler Intelligence Scale for Children - Revised, the Canadian Achievement Tests, and the Otis-Lennon Mental Ability Test scores were obtained from student files when available.

The Personality Inventory for Children-Revised. The PIC as described in detail in Chapter III, was completed for each subject by the mothers (and one father) of the children participating in the study. The Revised format of the PIC (1981) Parts I, II, III and IV encompassing all 640 questions was used. The administration of the PIC requires minimal participation by the clinician. Brief instructions to the parent describing the correct place to mark answers and encouraging that all questions be answered are provided on the cover of the inventory booklet.

The Walker Behavior Problem Identification Checklist. The Walker Checklist (Walker, 1970) is described by its author as a tool that a teacher can use in the difficult task of selecting children with behavior problems who should be referred for further psychological evaluation and treatment. The checklist consists of 50 descriptions of observable, maladaptive classroom behaviors. Walker (1970) completed a factor analysis of the 50 items scale which yielded five factors: Acting Out, Withdrawal, Distractibility, Disturbed Peer Relations, and Immaturity. Scale scores are obtained in these five factor areas and a total score is derived to provide a measure of overall behavioral functioning.

The 50 Walker items were drawn from 300 teacher descriptions of classroom behavior problems. A random sample of 50 experienced 4th through 6th grade teachers from an Oregon school district provided the three hundred descriptions. The Walker consists of the 50 most frequent descriptions of maladaptive classroom behavior from this sample. Item score weights were developed by using a panel of five behavioral scientists rating items for their influence on a child's present adjustment. Each item was assigned an arbitrary score weight ranging from 1 to 4 on the basis of the judges' averaged ratings. The checklist was originally normed on 534 students in grades 4, 5, and 6 in an Oregon school district. Subsequently it was normed on 469 preschool and primary children ages 2 through 12 years in the Eugene, Oregon area. A primary sample of 852 children in grades 1 through 3 was conducted in Battleground, Washington.

Walker (1983) in the Walker Problem Behavior Identification Checklist Manual reports the Kuder-Richardson split-half reliability coefficient of .98 with a standard deviation of 10.53. An estimate of test-retest reliability is reported in the Walker Manual of .80 for a three week interval. Total score stability coefficients approximate .80 across three separate studies. Scale score reliabilities are of a generally lower magnitude. A criterion validity study was reported in the Walker manual. It reported that 38 students identified as behavior disordered defined by the fact that they required classroom modifications, partial home instruction, and psychological referral scored significantly higher on Walker scores compared to matched controls.

The Canadian Achievement Tests (CAT). The Canadian Achievement Tests is a group administered achievement test which measures knowledge and understanding in reading, language, spelling, mathematics and reference skills at eight overlapping levels from grade 1 through grade 12. The Canadian Achievement Tests provide both norm referenced and criterion referenced achievement information. The standardization was conducted in 1981. The sample was comprised of more than 76,000 students from school districts which were selected to reflect three separate Canadian regions and urban-rural differences.

Content validity was approached by selecting items from curriculum guides and major textbooks in use by school systems in all parts of Canada.

A reading test measures phonetic analysis, structural analysis, reading vocabulary, and reading comprehension skills. A spelling test is organized around the phoneme-grapheme-morpheme approach. A language test is divided into language mechanics and language expression sections. The mathematics test contains a sampling of computational skills and mathematics concepts and applications. A reference skills test measures ten categories of information gathering skills.

The California Achievement Tests provided the initial pool of items for the CAT. Many test items were revised or deleted for appropriateness in Canadian curricula. In order to fill in the gaps and to meet two additional category objectives, over 1000 items written by Canadian teachers were added.

The sample of 76 students from grades 1 through 12 were drawn by stratified random sampling procedures from Canadian national public and separate (Roman Catholic) school populations. School type, geographic region, socioeconomic status and community type were variables taken into consideration in the standardization.

A single, equal interval scale of standard scores was developed which describes the range of performance from Grades 1.7 to 12.7 so that scores on different levels of the test would be related to a single scale.

Reliability estimates for each category objective are reported by level and by grade in the CAT Technical Bulletin. The large majority of Kuder-Richardson estimates are over .60.

The Otis-Lennon Mental Ability Test. The Otis-Lennon (Otis & Lennon, 1969) is a group-administered general mental ability measure designed to measure verbal, numerical, and abstract reasoning abilities necessary for academic success. A broad sampling of mental abilities yields a single score. The current version of the Otis-Lennon is constructed using the rationale of

Vernon's Hierarchical Theory of Human Abilities and Guilford's Structure of the Intellect Model.

The version used in this study was standardized in 1966. 12,000 students at each grade level from 1 through 7 were tested. The sampling procedure used reflected the entire U.S. educational system, taking into account socioeconomic status and geographic region. Six levels of the Otis-Lennon were constructed to measure verbal, numerical, and abstract reasoning abilities considered to be predictors of academic success. The broad sample of mental abilities yield a single score called the DIQ.

The Otis-Lennon Technical Handbook (Otis & Lennon, 1969) reports an alternate-forms median reliability coefficient of .92. The handbook also reports a median split-half reliability for all age and grade groups of .95. Stability of DIQ scores over one year ranged from .80 to .94 for the various levels of the test. Correlations with the Metropolitan Achievement Tests and the Stanford Achievement Tests are reported in the Handbook at the .50 to .70 range. Correlations with actual school grades are reported in the Handbook in the.50 to .70 range for grades 1 through 8 and in the .30 to .50 range for the high school level. Construct validity studies reported in the Handbook indicate significant positive correlations with the Stanford-Binet

Intelligence Scale (.60) and with the Raven's Progressive Matrices (.58 to .61).

The Wechler Intelligence Scale for Children - Revised (WISC-R). The WISC-R is a revised and restandardized version of the original scale (Weschler, 1974). The test is individually administered. The standardization was based on stratification from the 1970 US census. 2,200 students aged 6 1/2 to 16 1/2 years were tested. 100 boys and 100 girls at each of 11 age levels were tested. The scale has twelve subtests, six verbal (Information, Similarities, Vocabulary, Comprehension, Arithmetic, and Digit Span) and six performance (Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding, and Mazes). Ten subtests are mandatory, while Digit Span and Mazes are optional. Each subtest is weighted equally to yield three IQ's: verbal, performance and full scale.

The WISC-R is intended to be used with children between the ages of 6 and 16 years. The potential IQ's in the normative range are from 45 to 155, with a mean IQ of 100 and a standard deviation of 15 (mean subtest scale score = 10).

Similar factor loadings were found by researchers using mildly educationally handicapped children: Emotionally Disturbed, Learning Disabled, and Educable

Mentally Handicapped (Schooler, Beebe, & Koepke, 1978; Peterson & Hart, 1979). With few exceptions, these groups of mildly handicapped children show similar factor loadings.

The WISC-R manual has documented that the test is acceptably reliable as measured by test-retest and internal consistency methods. The reliability coefficients for the subtests range from .70 to .86 and for the IQ's from .90 to .96. The reliability coefficients, however, are a function of numerous variables, therefore the reader should refer to the manual (Wechsler, 1974). Several studies that have examined the predictive validly have shown that the WISC-R is a valid predictor of achievement as measured by standardized achievement tests such as the Peabody Achievement Tests (DeBell & Vance, 1977). In addition factor analytic studies have provided substantial evidence for construct validity (Kaufman, 1979).

Procedure

The parents of selected students enrolled in the Yellowhead School Division were invited by telephone to participate in the study on a voluntary basis. The mothers and one father of 54 grade two through grade seven students completed the PIC. Their children were enrolled in eight of the Yellowhead School Division's schools. The geographic area consisted of two towns and surrounding rural districts. 76 of 78 parents contacted by phone agreed to participate in the study by completing the PIC. The PIC questionnaire was mailed to the selected households along with a cover letter and a prepaid return envelope. Please see Appendix A for details. Follow-up phone call contacts were made 10 to 14 days after the mailing requesting the return of the materials.

54 of the 76 questionnaires mailed were returned (71%), 53 were scorable (70%). Returns by education group were: Special Needs 18 of 27 mailed (67% with one unscorable), Resource 18 of 27 mailed (67%) and Regular Class 18 of 22 mailed (82%). The returned PIC questionnaires were hand scored.

Of the 78 people contacted by phone and invited to participate in the study 68% agreed to participate and returned a scorable questionnaire.

The rate of return was considered to be a relatively high rate of return in light of mail survey research precedents of 30 to 40 percent return rate (Beed & Stimson, 1985). Of the two parents who refused to participate during initial phone contact, one cited a religious reason and the other cited privacy as a rationale for not wishing to participate. Both refusals came from the Regular Class group. The rate of return may in part be attributed to the fact that the researcher was known in the communities and was employed in the school division serving the communities sampled. Three parents chose not to use the stamped return envelope and hand delivered the questionnaires to the researcher's home.

Most parents contacted in follow-up calls indicated that the 640 item questionnaire posed no difficulty in completing, they had just forgot or misplaced it. Several mothers indicated that unexpected household or farm chores precluded their completing the questionnaire. Three mothers indicated that impending moves or rearranged vacation plans precluded their continued participation. It was felt that there was no systematic bias identified in follow-up to non-responders. Without apparent non-responsing bias and the high rate of return, it is felt that the sampling procedure undertaken was successful in obtaining a representative sample.

Subject selection of Special Education students was conducted on the basis of random selection of students meeting all school division Special Education criteria. Selection was conducted ensuring representation from the two major population areas of the school division. Regular Class subjects came from the same schools as the

Special Education students and were matched for age. The teachers of the students participating in the study were asked to complete the Walker Problem Behavior Identification Checklist. Permission was granted by the school division to obtain the results of routine divisional Canadian Achievement testing and the Otis-Lennon Mental Ability testing. Wechsler Intelligence Scale for Children (WISC-R) verbal, performance and full scale scores were collected for those students enrolled in the two Special Education groups.

Research Questions and Analyses

Based on the literature review and the questions posed in this study the following research questions were generated:

Question #1

Will the screening scale of the PIC (Adjustment scale) differentiate the Special Needs, Resource, and Regular Class groups?

Question #2

Will Children in Special Needs classes, Resource classes, and Regular classes have different mean score profiles on the PIC?

Question #3

If the Special Needs, Resource and Regular class students differ on the PIC on which variables do they differ?

Question #4

Does any one educational group have elevated PIC scale scores (T-scores over 60 or 70)?

Question #5

Are there group differences in the total number of PIC scales with elevated scores (T-scores over 60 or 70)?

To answer the above questions the following analysis were performed. Means and standard deviations for PIC scale scores were calculated. A one-way analysis of variance (Anova) was conducted on the T-scores for the Adjustment scale to examine group effects. Scheffe post-hoc pairwise contrasts were conducted to examine differences between groups.

A one-way multivariate analysis of variance (Manova) was performed on the 16 PIC Profile scales scores for the three experimental groups. Heck greatest root tests were conducted to examine group differences on the 16 profile variables. Manovas where conducted in the same manner on a logical division of the 20 PIC scales: Factor scales, Validity scales, the Cognitive Triad scales, and the remaining Clinical scales.

The Chi-square statistic was used to test proportions of subjects showing elevated T-scores across the PIC scales.

A descriptive analysis of the number of subjects and percentage of total groups scoring within certain T-score ranges was carried out on all 37 PIC scales.

To further assist in understanding the subject demographics, an Anova was conducted on the Walker Problem Behavior Identification Checklist Total scale score and a Manova was conducted on the Walker factor scales. Pearson Product Moment Correlations were calculated between the various measures of intelligence, achievement, and measures to examine the external validity of the PIC.

The Anova and Manovas were conducted using the University of Alberta Division of Educational Research Services programs: ANOV16 (1983) and MULV16 (1983). The Chi-square Statistic, Kruskal-Wallis Anova, and the Pearson Correlations were calculated using SPSS-X Release 2.1. In testing statistical significance, the .05 level of significance was deemed necessary in rejecting the null hypothesis.

CHAPTER V

Results

In this chapter the results of the data analyses described in the previous chapter will be presented as they relate to the questions posed in this study.

Descriptive Statistics

PIC Profile Scales. Means and standard deviations for the scale T-scores were computed for each of the 16 PIC Profiles scales for the three educational groups. The results are presented in Table 2.

(1) Special Needs students: An analysis of the mean profile scores as presented in Table 2 shows that the Special Needs students scored the highest on the Intelligence Screening (IS) scale, four standard deviations above the mean. This scale far exceeds the other scale elevations and indicates a significant deficit in intellectual abilities. The second and third highest scores were on the Development (DVL) and Achievement (ACH) scales, both were two standard deviations above the mean. These results indicate that parents of Special Needs students see their children's greatest need in the area of cognitive functioning.

Table 2

Score Means and Standard Deviations for the PIC Profile Scales

	Special Needs		Resource		Regular Class	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
L	52.2	11.3	45.4	9.6	50.7	14.0
F	69.2*	12.2	54.3	10.4	53.3	13.5
DEF	47.3	8.1	41.3	11.6	47.7	10.4
ADJ	73.8**	13.7	69.7**	18.0	53.1	9.2
ACH	74.1**	7.0	66.1*	10.2	47.3	8.1
IS	99.5**	18.0	73.1**	16.6	53.1	20.8
DVL	74.6**	15.5	61.8*	9.8	45.4	9.2
SOM	57.0	11.0	53.5	11.1	48.8	11.2
D	64.4*	13.4	57.9	12.9	53.9	11.0
FAM	47.2	4.4	48.8	8.6	48.1	7.3
DLQ	64.3	13.7	57.9	17.2	50.3	5.9
WDL	57.6	10.1	51.6	8.1	52.3	11.6
ANX	61.0	14.9	56.1	11.7	55.3	11.3
PSY	74.5	22.7	55.6	11.6	56.5	17.2
HPR	57.9	11.2	62.4	14.0	51.7	9.8
SSK	64.3	14.8	56.6	12.9	53.7	12.7

* = At least one standard deviation above mean

* * = At least two standard deviations above mean

Elevations of two standard deviation above the mean on the Adjustment (ADJ) and Psychosis (PSY) scales indicates that the parents also see their children as having adjustment, behavioral and emotional problems. The mean T-score of 69.2 for this group on the Frequency (F) scale indicates that this group has a statistically unusual profile.

(2) Resource students: The mean profile scores as presented in Table 2 show that the Resource group scored highest on the Intelligence Screening (IS) scale. The second and third highest scale scores were on Achievement (ACH) and Adjustment (ADJ) scales. These two scale means were the only means that were two standard deviations above the mean. The Hyperactivity (HPR) and Development (DVL) scales were elevated one standard deviation above the mean for this group.

The results indicate that parents of Resource students see their children as having intellectual, developmental, conduct, and achievement problems.

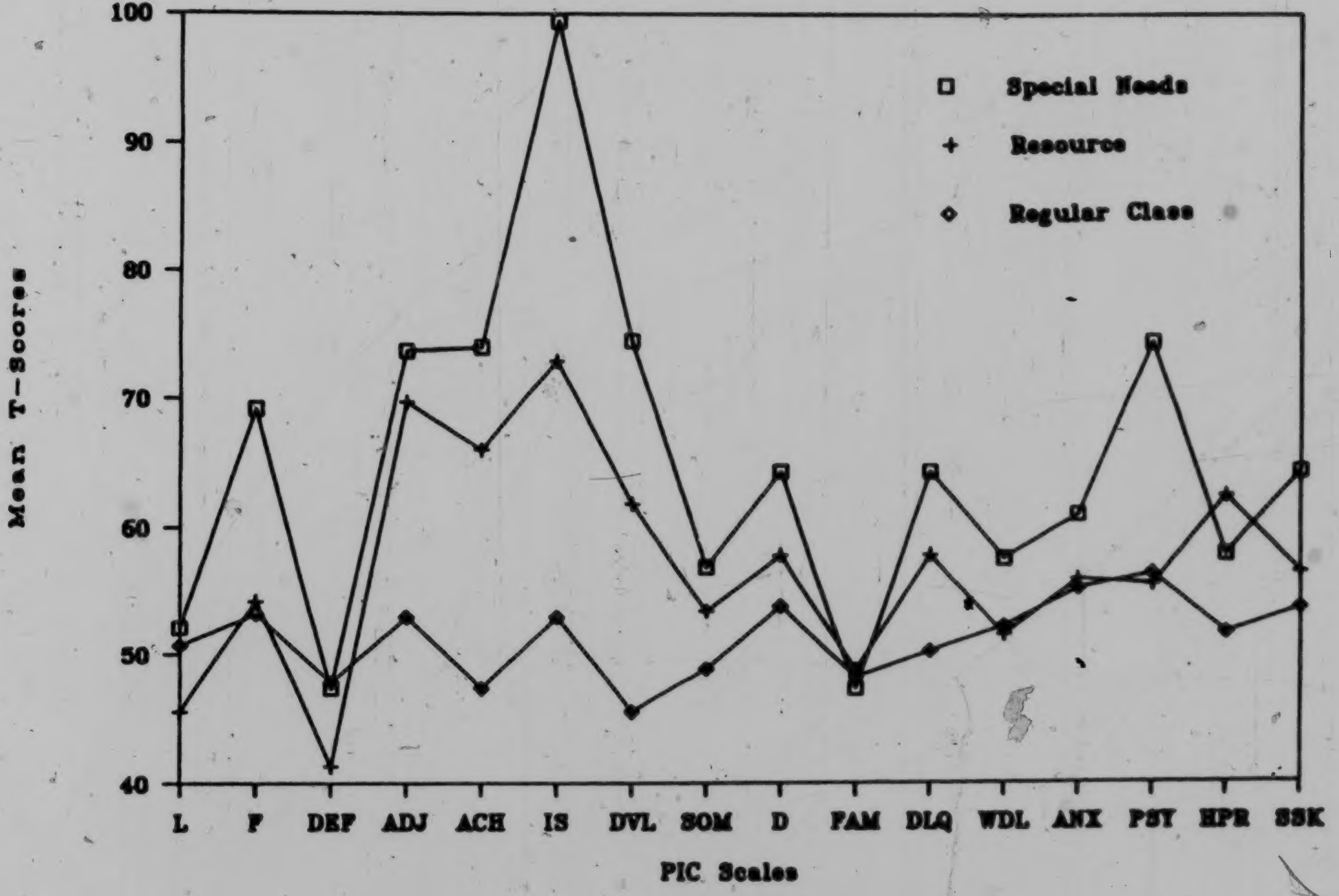
(3) Regular Class students: An analysis of the mean profile scores in Table 2 shows that there were no mean scores one standard deviation from the mean. The mean profile scores are within one standard deviation from the mean indicating little psychopathology in this group as a whole as reported by parents.

These results also indicate that the Regular Class group obtained scores similar to the original nonclinical norming group PIC reported in the PIC Manual. The results for the Regular Class group are consistent with the results reported by Forster (1986) who conducted a study in a neighboring Alberta school district providing evidence that the PIC is an appropriate instrument to be used with a population of Alberta children.

For visual comparison and in keeping with the PIC clinical report, the 16 T-Score profile scale means are presented for the three educational groups in Figure 1. The graph shows visually that the greatest group differences in means are on the Cognitive Triad (IS, DVL, ACH) and Adjustment (ADJ) screening scales. The three group means converge in the nonclinical range for the Family Relations scale indicating little family pathology for any group. The three group means also converge in the nonclinical range for the Lie (L) and Defensiveness (DEF) scales indicating the overall validity of parental reports.

The elevation of the Special Needs group approaching two standard deviations above the mean on the Frequency (F) scale indicates that a statistically unusual profile was produced for this group. The highest elevations

Figure 1. Mean PIC scale scores for the three educational groups.



across scales were obtained by this group indicating possible psychopathology.

An inspection of the means for the Defensiveness (DEF) and Lie (L) scales which are not elevated for all groups indicates that overall test validity is obtained across groups because these scales are used to detect faking or attempts to place a child in the best light.

In general, visually there appears to be three distinct groups on the graph with little overlap. The highest mean elevations were obtained by the Special Needs group, the second highest elevations were obtained by the Resource group, and the Regular Class group produced a relatively flat profile.

PIC Factor Scales. Means and standard deviations in T-scores were computed for each of four PIC Factor scales for the three educational groups. The results are presented in Table 3. The highest elevations of T-score means were on the Cognitive Development factor (IV) by the Special Needs and Resource groups. The Special Needs group mean Factor IV score is over three standard deviations above the mean, the Resource group mean score is over two standard deviations above the mean, and the Regular Class group mean is very close to T-score mean of 50.

Table 3

Scale Score Means and Standard Deviations for the PIC Factor Scales

	Special Needs		Resource Room		Regular Class	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
	63.1*	15.9	60.5*	13.4	53.8	11.8
II	64.1*	14.9	54.7	13.0	53.0	13.2
III	61.8*	15.2	57.4	12.3	58.5	14.8
IV	87.9**	20.8	67.9*	14.7	50.6	13.2

I = Undisciplined Poor Self Control

II = Social Incompetence

III = Internalization/Somatic Symptoms

IV = Cognitive Development

* = At least one standard deviation above mean

* * = At least two standard deviations above mean

PIC Experimental Scales. Means and standard deviations in T-scores were computed for each of the 17 PIC factor scales for the three educational groups. The results are presented in Table 4.

(1) The Special Needs students: The mean profile scores as presented in Table 4 show that the Special Needs group scored the highest on the Ego Strength (ES), Adolescent Maladjustment (AGM), and Internalization (INT) scales, all above one standard deviation above the mean. Other mean profile scores above one standard deviation were obtained on the Aggression (AGN), Excitement (EXC), Externalization (EXT), Infrequency (INF), Learning Disabilities Prediction (LDP), and Reality Distortion scales (RDS).

(2) The Resource students: The mean profile scores as presented in Table 4 show that the Resource group scored highest on the Adolescent Maladjustment (AGM) and Ego Strength (ES) scales, one standard deviation above the mean. There were no other scales elevated above one standard deviation for this group.

(3) Regular Class students: The mean profile scores as presented in Table 4 show that the Regular Class group obtained no scores elevated one standard deviation above the mean on any of the Experimental Scales.

Table 4

Score Means and Standard Deviations for the PIC Experimental Scales

	Special Needs		Resource Room		Regular Class	
Scales	Mean	S.D.	Mean	S.D.	Mean	S.D.
AGM	65.8*	10.7	61.2*	14.0	51.4	6.4
AGN	60.1*	18.3	55.3	16.5	50.6	10.5
ASO	59.1	15.2	58.8*	12.5	52.2	9.3
CDY	55.2	12.9	52.4	9.7	52.4	8.9
DP	51.9	9.2	50.0	12.1	49.3	7.1
ES	69.4*	8.7	61.7*	8.6	51.9	13.0
EXC	60.1*	10.2	55.7	8.7	53.3	12.4
EXT	63.4*	14.4	59.9*	12.6	50.3	13.7
INF	60.6*	18.4	47.7	8.2	53.6	13.2
INT	65.2*	13.1	58.3	12.2	55.2	12.4
I-E	50.1	11.7	45.6	12.3	47.7	8.8
K	45.8	12.1	48.2	7.2	49.3	8.5
LDP	64.5*	10.1	58.9	6.6	47.9	11.4
RDS	62.7*	15.1	56.5	13.3	52.5	11.5
SR	48.8	8.4	45.4	11.0	50.8	10.1
SD	42.3	12.6	43.6	8.7	50.6	10.2
SM	57.1	11.8	54.8	11.4	50.4	9.6

* = At least one standard deviation above mean

* * = At least two standard deviations above mean

Walker Problem Behavior Identification Checklist. In order to better understand the subject characteristics using a traditional measure of classroom adjustment, means and standard deviations in T-scores were computed for the Walker Total score and each of the five Walker Factor scales. The results are presented in Table 5.

(1) Special Needs students: An inspection of the mean scale scores as presented in Table 5 shows that the Special Needs students obtained scores at least one standard deviation above the mean except on the Distractibility scale.

(2) Resource students: An inspection of the Walker scores as presented in Table 5 show that the Resource students' mean scales scores were all less than one standard deviation above or below the mean.

(3) Regular Class group: An inspection of the mean Walker scores as presented in Table 5 shows that the Regular Class students' mean scores were all less than 50 but were all within one standard deviation below the mean.

A visual comparison of means for the three education groups is presented in Figure 2 which shows means for the six Walker scales. An inspection of this graph shows three distinct lines which do not intersect, with the

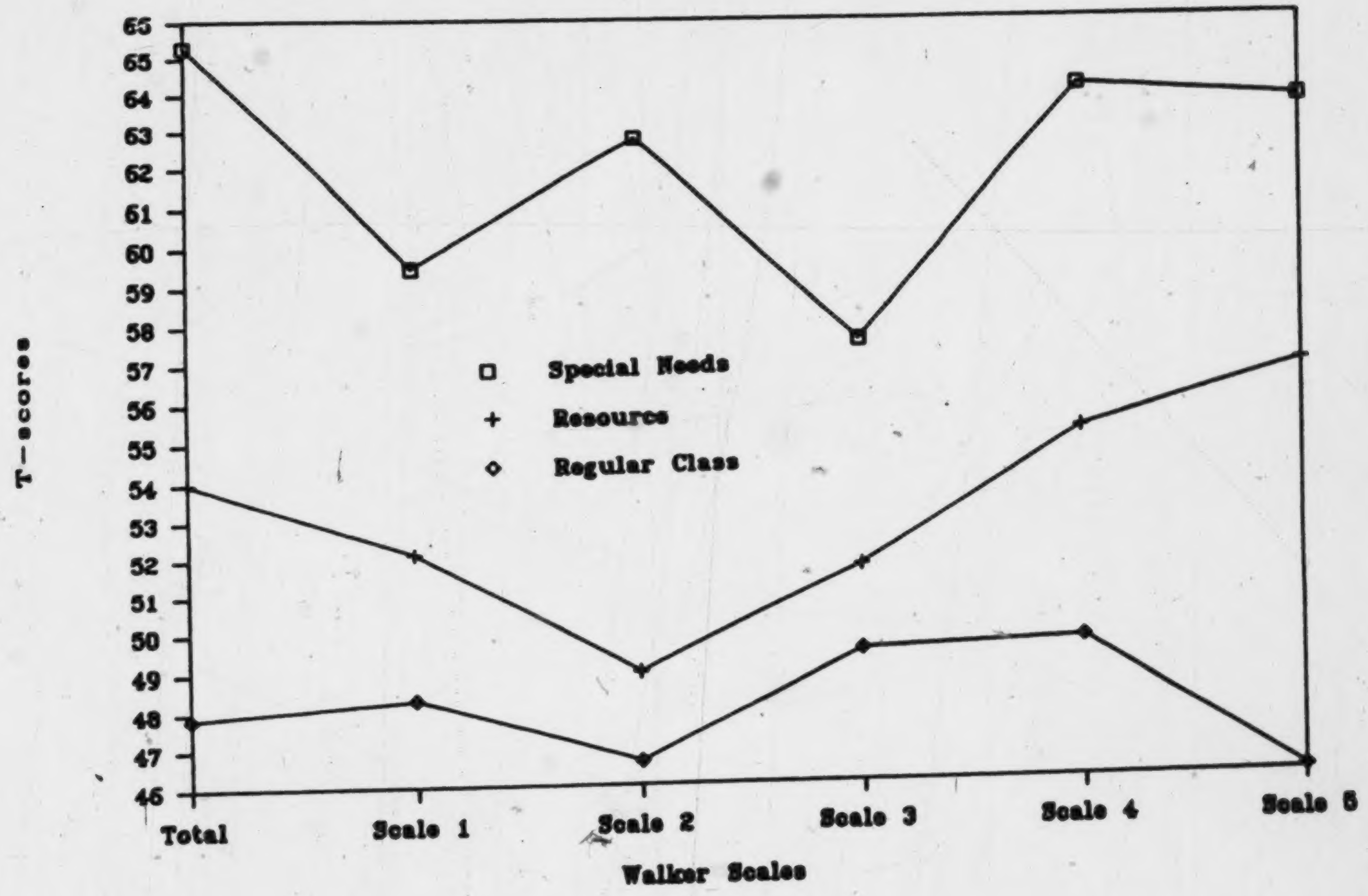
Table 5

Score Means and Standard Deviations for the Walker Total and Factor Scales

	Special Needs		Resource Room		Regular Class	
Scale	Mean	S.D.	Mean	S.D.	Mean	S.D.
Total	65.3	18.0	54.0	9.8	47.8	6.9
SI	59.5	15.3	52.1	9.8	48.3	6.9
S2	62.8	21.7	48.9	7.0	46.6	10.0
S3	57.5	13.4	51.7	6.6	49.4	8.4
S4	64.1	20.0	55.2	9.2	49.7	12.3
S5	63.7	20.8	56.8	14.1	46.1	6.7

Total = Total Walker Score
S1 = Acting Out
S2 = Withdrawal
S3 = Distractibility
S4 = Disturbed Peer Relations
S5 = Immaturity

Figure 2. Mean Walker scale scores for the three educational groups.



Special Needs group showing the most psychopathology and the Regular Class the least.

Research Questions

The statistical analyses reported below were conducted to a answer the following research questions:

Question 1

Will the screening scale of the PIC (Adjustment scale) differentiate between the Special Needs, Resource, and Regular Class groups?

In order to determine if there was a significant difference between the three educational groups a one way analysis of variance was conducted on the Adjustment scale scores. The results of the Anova are presented in Table 6.

An examination of the analysis shows that there was a significant main, F (2,50) = 10.15, p <.001. Scheffe post-hoc pairwise contrasts were conducted to examine differences between groups. The Regular Class group (mean = 53.06) differed significantly from the Special Needs group (mean = 73.82), F (2,50) = 17.86, p <.001; and from the Resource group (mean = 69.72), F (2,50) = 11.84, p <.005 The Resource Group did not significantly differ from the Special Needs group at the .05 level.

Table 6

The Analysis of Variance for the PIC Adjustment Scale

Source	SS	DF	MS	F	P
Groups	4285.23	2	2142.62	10.15	.000
Error	10558.92	50	211.18		
Total	14844.22				

The research question was answered partially in the affirmative: It is possible to differentiate the two Special Educations groups from students in the Regular Class group on the basis on the basis of Adjustment screening scale scores, but it was not possible to differentiate the Special Needs group from the Resource group.

Questions 2 and 3

2. Will children in the Special Needs Classes, Resource Rooms and Regular Classes have different profiles on the PIC?

3. If the Special Needs, Resource and Regular Class groups differ on the PIC which variables do they differ on?

In order to answer these questions with the limitations of the relatively small number of subjects compared to the numerous PIC scales, several Manovas were conducted on logical subgroupings of the PIC scales. The four subgroupings were the Cognitive Triad scales, the Clinical scales (without the Cognitive Triad), the Factor scales, and the Validity scales.

Validity Scales. The results of the Manova on the Validity scales (L, F, DEF) are presented in Table 7. An examination of the results shows that the Rao's Approximate F test using Wilks Lamda produced a F-ratio of F (6,96) = 4.1989, p < .00086. Table 7 also presents the between group contrasts for the three educational groups.

The Heck test using 95% confidence intervals showed significant differences only on the Frequency scale. The Special Needs group (mean = 69.2) differed significantly from the Resource group (mean = 54.3), p <.05, and from the Regular Class group (mean = 53.3), p <.05 level. The group differences on this validity scale may be due to the statistically unusual profile produced by the Special Needs group.

Factor Scales. The results of the Manova on the Factor Scales (I,II,III,IV) are presented in Table 8. An examination of the results shows that the Rao's Approximate F test using Wilks Lamda produced a F-ratio of F (8,94) = 4.5591, p < 0.0001 level. Table 8 also presents the between group contrasts for the three educational groups.

The Heck test using 95% confidence intervals showed significant differences only on the Factor IV scale (Cognitive Development). The only significant comparison

Table 7

The Manova Conducted on the PIC Validity Scales and Heck Test for Group Comparisons

Wilks Lambda	DF1	DF2	F	Significance
0.627461	6	96	4.1989	0.00086

Heck	S	M	N	Significance
0.	2.0	0.0	23.0	0.0501

PIC Scales	Experimental Groups	.05 Confidence Interval Scale Significant Difference
Lie	SN - RES	no
	SN - REG	no
	RES - REG	no
F	SN - RES	yes
	SN - REG	yes
	RES - REG	no
DEF	SN - RES	no
	SN - REG	no
	RES - REG	no

SN = Special Needs Group

REG = Regular Class Group

F = Frequency

RES = Resource Group

L = Lie

DEF = Defensiveness

Table 8

The Manova for the PIC Factor Scales and the Heck Test for Group Comparisons

Wilks Lambda	DF1	DF2	F	Significance
0.51906	8	94	4.5591	0.0001

Heck	S	M	N	Significance
0.2	2.0	0.5	22.5	0.0502

PIC Variable	Experimental Groups	.05 Confidence Interval Significant Difference
FACTOR I	SN - RES	no
	SN - REG	no
	RES - REG	no
FACTOR II	SN - RES	no
	SN - REG	no
	RES - REG	no
FACTOR III	SN - RES	no
	SN - REG	no
	RES - REG	no
FACTOR IV	SN - RES	no
	SN - REG	yes
	RES - REG	no

SN = Special Needs RES = Resource REG = Regular Class

Factor I = Poor Self Control Factor II = Social Incompetence Factor III = Internalization

Factor IV = Cognitive Development

on this scale was between the Special Needs (mean = 87.9) and the Regular Class (mean = 50.6) groups.

The Cognitive Triad. The results of the Manova on the Cognitive Triad Scales (IS, ACH, DVL) are presented in Table 9. An examination of the results shows that the Rao's Approximate F test using Wilks Lamda produced a F-ratio of F (6,96) = 14.1538, p < 0.01. Table 9 also presents the between group contrasts for the three educational groups.

The Heck test using 95% confidence intervals showed significant differences on all three scales. On the Achievement Scale (ACH) significant differences were found between the Special Needs group (mean = 74.1) with the Regular Class group (mean = 47.3) and the Regular Class group and the Resource group (mean = 66.1). On the Intelligence Screening scale the Special Needs group (mean = 99.5) was found to be significantly different from both the Regular Class (mean = 53.1) and Resource (mean = 73.1) groups. On the Development (DVL) scale the Regular Class group (mean = 45.4) differed significantly from both the Resource (mean = 61.8) and Special Needs (mean = 74.1) groups.

The Clinical Scales. The results of the Manova on the Clinical Scales without the Cognitive Triad (SOM, D, FAM, DLQ, WDL, ANX, PSY, HPR, SSK) are presented in Table

Table 9

The Manova Conducted on the Cognitive Triad and the Heck Test for Group Comparisons

Wilks Lambda	DF1	DF2	F	Significance
0.281551	6	96	14.[illegible]538	0.0

Heck Est.	S	M	N	Significance
0.1972	2.0	0.0	23.0	0.0496

PIC Variable	Experimental Groups	.05 Confidence Interval Significant Difference
Achievement	SN - RES	no
	SN - RC	yes
	RES - RC	yes
Intelligence Screening	SN - RES	yes
	SN - RC	yes
	RES - RC	no
Development	SN - RES	no
	SN - RC	yes
	RES - RC	yes

SN = Special Needs Group RES = Resource Group

RC = Regular Class Group

10. An examination of the results shows that the Rao's Approximate F test using Wilks Lamda produced a F-ratio of F (18,84) = 1.67 which was not significant, p >.06.

Research Question 2 was answered in the affirmative: Children in Special Needs, Resource and Regular Class groups do have differing PIC profiles. Follow-up analyses conducted in answering Research Question 3 found that the major profile differences among the three educational groups lie in the Cognitive Triad scales (IS, ACH, DVL).

Question 4

Does any one educational group have elevated PIC scale scores (T-scores over 60+ and 70+)?

The 20 Regular PIC Scales

In order to answer this question PIC scale scores were grouped according to T-score cutoffs. Table 11 presents the percentage of subjects obtaining T-scores 60 and above (60+) and also it shows the percentage of subjects obtaining scores 70 and above (70+) by scale for the three educational groups for the 20 regular PIC scales.

An inspection of the data shows that 100% of the Special Needs students can be identified by using the T-score 60+ cutoff on the Intelligence Screening (IS)

Table 10

The Manova the Clinical Scales without the Cognitive Triad and the Heck Test for Group Comparisons

Wilks Lambda	DF1	DF2	F	Significance
0.541614	18	84	1.6744	0.06055

Heck Est.	S	M	N	Significance
0.3691	2.0	3.0	20.0	0.0496

PIC Variable	Experimental Groups	.05 Confidence Interval Significant Difference
Som	SN - RES	no
	SN - RC	no
	RES - RC	no
Depression	SN - RES	no
	SN - RC	no
	RES - RC	no
Family	SN - RES	no
	SN - RC	no
	RES - RC	no
Delinquency	SN - RES	no
	SN - RC	no
	RES - RC	no
Withdrawal	SN - RES	no
	SN - RC	no
	RES - RC	no
Anxiety	SN - RES	no
	SN - RC	no
	RES - RC	no
Psychosis	SN - RES	no
	SN - RC	no
	RES - RC	no
Hyperactivity	SN - RES	no
	SN - RC	no
	RES - RC	no
Social Skills	SN - RES	no
	SN - RC	no
	RES - RC	no

SN = Special Needs RES = Resource Group RC = Regular

Table 11

Percentage of Subjects with Scales Scores above 60 and 70 for the 20 Regular PIC Scales

	T-scores 60 and Over				T-scores 70 and Over			
	SN	RES	REG		SN	RES	REG	
I	47.1	38.9	27.8		35.3	22.2	16.7	
II	58.8	33.3	27.8		41.2	22.2	16.7	**
III	52.9	33.3	27.8		35.3	16.7	16.7	
IV	88.2	61.1	16.7	*	76.5	27.8	5.6	**
L	29.4	16.7	33.3		11.8	5.6	11.1	
F	76.5	22.2	11.1	*	52.9	11.1	11.1	**
DEF	5.9	5.6	16.7		0.0	0.0	0.0	
ADJ	88.2	77.8	33.3	*	58.8	38.9	5.6	**
ACH	100.0	83.3	0.0	*	82.4	16.7	0.0	**
IS	100.0	88.9	27.8	*	88.2	61.1	5.6	**
DVL	76.5	55.6	5.6	*	58.8	16.7	0.0	**
SOM	29.4	22.2	5.6		11.8	5.6	5.6	
D	52.9	50.0	27.8		35.3	11.1	11.1	**
FAM	5.9	11.1	5.6		0.0	5.6	5.6	
DLQ	52.9	22.2	11.1	*	29.4	22.2	0.0	
WDL	35.3	16.7	22.2		17.6	0.0	11.1	
ANX	47.1	38.9	38.9		29.4	16.7	11.1	
PSY	70.6	33.3	22.2	*	41.2	11.1	16.7	
HPR	35.3	38.9	16.7		17.6	22.2	0.0	
SSK	70.6	33.3	27.8	*	35.3	22.2	11.1	

SN = Special Needs RES = Resource REG = Regular Class
* = sig. x2 (see Table 15) ** = sig x2 (see Table 16)

scale. The percentage identified only drops to 88.2% when the cutoff is raised one standard deviation to 70+. At the 70+ level on the Intelligence Screening scale (IS) only one Regular Class subject is identified (5.6%). 88.9% of the Resource group is identified on the Intelligence Screening (IS) scale at the 60+ cutoff and the percentage drops to 61.1% at the 70+ cutoff.

The results for the other two Cognitive Triad scales Development (DVL) and Achievement (ACH) are similar. No Regular Class subject is identified at the 60+ or 70+ T-score cutoff levels on the Achievement (ACH) scale. No Regular Class group member is identified on the Development (DVL) scale at the 70+ cutoff. At the 60+ cutoff only one subject in the Regular Class group is identified (5.6%).

On Factor IV, the Cognitive Development Factor, results are similar to those of the Cognitive Triad (IS, DVL, ACH). At the 70+ cutoff 76.5% of the Special Needs group, 27.8% of the Resource group, and one Regular Class subject were identified (5.6%).

The PIC screening scale, Adjustment (ADJ) scale, results indicate that on the basis of the PIC Manual recommendations (cutoff of T=60 and above) 88.2% of the Special Needs group would have obtained scores which normally would have indicated the need for further psychological or psychiatric assessment.

77.8% of the Resource group and 33.3% of the Regular Class group would have been identified as requiring further assessment.

Scales on which at least 50% of a group was identified at the 70 cutoff were for the Special Needs group: Factor IV (Cognitive Development), Frequency (F), Adjustment (ADJ), Achievement (ACH), Development (DVL), and Intelligence Screening (IS). For the Resource group only the Intelligence Screening (IS) scale had representation over 50%. The highest 70+ representation for the Regular Class group was on the Psychosis (PSY) scale at 16.7% membership.

In general an inspection of the T-score cutoff data shows that the most psychopathology was demonstrated by the Special Needs group and the least by the Regular Class group. On the 60+ T-score cutoff data this relationship held over all clinical scales except for the Family Relations and Hyperactivity scales.

The PIC Experimental Scales

Table 12 presents the percentage of subjects by educational group having T-scores above the 60+ and 70+ cutoffs for the PIC Experimental Scales.

Table 12

Percentage of Subjects Having Scale Scores Above 60 and 70 for the Experimental PIC Scales

	T-Scores 60 and Over			T-Scores 70 and Over		
	SN	RES	REG	SN	RES	REG
AGM	58.8	50.0	11.1	41.2	16.7	0.0
AGN	47.1	27.8	22.2	23.5	22.2	11.1
ASO	35.3	33.3	22.2	23.5	22.2	5.6
CDY	47.1	16.7	22.2	5.9	11.1	0.0
DB	17.6	16.7	11.1	0.0	11.1	0.0
ES	82.4	72.2	16.7 *	52.9	27.8	16.7 **
EXC	47.1	38.9	33.3	17.6	11.1	11.1
EXT	58.8	33.3	16.7	29.4	22.2	5.6
INF	58.8	5.6	38.9	23.5	0.0	11.1
INT	52.9	50.0	27.8	41.2	22.2	11.1
I-E	17.6	I6.7	11.1	5.9	16.7	0.0
K	17.6	0.0	5.6	0.0	0.0	0.0
LDP	58.8	61.1	16.7 *	35.3	0.0	5.6 **
RDS	52.9	44.4	16.7	17.6	11.1	11.1
SR	11.8	22.2	11.1	0.0	0.0	5.6
SD	0.0	0.0	11.1	0.0	0.0	0.0
SM	29.4	38.9	5.6 *	5.9	11.1	5.6

* = significant chi-square (see Table 15)

** = significant chi-square (see Table 16)

Only one scale, Ego Strength (ES), had membership over 50% at the 70+ cutoff, this was for the Special Needs group at 52%. On the Ego Strength (ES) scale at the 60+ cutoff Special Needs membership was at 82.4%, Resource at 72.2%, and the Regular Class at 16.7%.

The second scale on which a group was identified over 50% was the Adolescent Maladjustment (AGM) scale, only at the 60+ cutoff level. 58.8% of the Special Needs, 50.0% of the Resource and 11.1% of the Regular Class groups were identified at the 60+ T-score cutoff level.

The third scale on which a group was identified as having membership over 50% at the 60+ cutoff was the Externalization (EXT) scale. 58.8% of the Special Needs, 33.3% of the Resource, and 16.7% of the Regular Class group were identified.

The fourth scale on which a group was identified as having membership over 50% at the 60+ cutoff was the Infrequency (INF) scale. 58.8% of the Special Needs group, 5.6% of the Resource group, and 38.9% of the Regular Class group were identified

The fifth scale on which a group was identified as having membership over 50% at the 60+ cutoff was the Internalization (INT) scale. 52.9% of the Regular Class, 50.0% of the Resource group, and 27.8% of the Regular Class group were identified.

The sixth scale on which a group was identified as having membership over 50% at the 60+ cutoff was the Learning Disabilities Prediction (LDP) scale. 58.8% of the Special Needs, 61.1% of the Resource, and 16.7% of the Regular Class groups were identified.

The seventh scale on which a group was identified as having membership of over 50% at the 60+ cutoff was the Reality Distortion (RDS) scale. 52.9% of the Special Needs, 44.4 % of the Resource and 16.7% of the Regular Class groups were identified at the 60+ T-score cutoff level.

In general, an inspection of the PIC Experimental scales data shows that the most psychopathology was demonstrated by the Special Needs group and the least by the Regular Class group. This relationship was similar to the PIC Profile scales result.

To further assist in the examination of educational group representation on individual PIC scales for Question 4, the differences between in groups in the percentages above the score cutoffs were calculated. Table 13 presents these group differences in the percentage of subjects identified above 60 and 70 T-score cutoff for the 20 regular PIC scales.

The Cognitive Triad (ACH, IS, DVL) scales results show the greatest differences between the two Special

Table 13

Group Differences in Percentages of Scale Scores Above 60 and 70 for the 20 Regular PIC Scales

	T-Scores 60 and Over Group Differences			T-Scores 70 and Over Group Differences		
	SN-RES	SN-REG	RES-REG	SN-RES	SN-REG	RES-REG
I	8.2	19.3	11.1	13.1	18.6	5.6
II	25.5	31.0	5.6	19.0	24.5	5.6
III	19.6	25.2	5.6	18.6	18.6	0.0
IV	27.1	71.6	44.4	48.7	70.9	22.2
L	12.7	-3.9	-16.7	6.2	0.7	-5.6
F	54.2	65.4	11.1	41.8	41.8	0.0
DEF	0.3	-10.8	-11.1	0.0	0.0	0.0
ADJ	10.5	54.9	44.4	19.9	53.3	33.0
ACH	16.7	100.0	83.3	65.7	82.4	16.7
IS	11.1	72.2	61.1	27.1	82.7	55.6
DVL	20.9	70.9	50.0	42.2	58.8	16.7
SOM	7.2	23.0	16.7	6.2	6.2	0.0
D	2.9	25.2	22.2	24.2	24.2	0.0
FAM	-5.2	0.3	5.6	-5.6	-5.6	0.0
DLQ	30.7	41.8	11.1	7.2	29.4	22.2
WDL	18.6	13.1	-5.6	17.6	6.5	-11.1
ANX	8.2	8.2	0.0	12.7	18.3	5.6
PSY	37.3	48.4	11.1	30.1	24.5	-5.6
HPR	-3.6	18.6	22.2	-4.6	17.6	22.2
SSK	37.3	42.8	5.6	13.1	24.2	11.1

SN = Special Needs RES = Resource REG = Regular

Education groups and the Regular Class group. At the 60+ cutoff group percentage point differences between the Special Needs and the Regular Class group were 100 percentage points for the Achievement Scale (ACH), 72.2 percentage points for the Intelligence Screening (IS) scale, and 70.9 percentage points for the Development (DVL) scale. At the 60+ cutoff group percentage point differences between the Resource group and the Regular Class group were 83.3 percentage points for the Achievement (ACH) scale, 61.1 percentage points for the Intelligence Screening (IS) scale and 50.0 percentage points for the Development (DVL) Scale.

An inspection of the data in Table 13 shows other large percentage point differences between groups indicating differing profiles on the PIC particularly on the Cognitive Triad Scales (ACH, IS, DVL) and the several clinical scales for the Special Needs vs Regular Class comparison. An inspection of the data also shows few negative numbers indicating more psychopathology in the two Special Education groups, with the most in the Special Needs group.

Table 14 presents these group percentage point differences in subjects identified above the 60+ and 70+ T-score cutoffs for the PIC Experimental scales. At the 60+ cutoff group differences between the Special Needs

Table 14

Group Differences in Percentages of Scale Scores Above 60 and 70 for the PIC Experimental Scales

	T-Scores 60 and Over Group Differences			T-Scores 70 and Over Group Differences		
	SN-RES	SN-REG	RES-REG	SN-RES	SN-REG	RES-REG
AGM	8.8	47.7	38.9	24.5	41.2	16.7
AGN	19.3	24.8	5.6	1.3	12.4	11.1
ASO	2.0	13.1	11.1	1.3	18.0	16.7
CDY	30.4	24.8	-5.6	-5.2	5.9	11.1
DP	1.0	6.5	5.6	-11.1	0.0	11.1
ES	10.1	65.7	55.6	25.2	36.3	11.1
EXC	8.2	13.7	5.6	6.5	6.5	0.0
EXT	25.5	42.2	16.7	7.2	23.9	16.7
INF	53.3	19.9	-33.3	23.5	12.4	-11.1
INT	2.9	25.2	-22.2	19.0	30.1	11.1
1-E	1.0	6.5	5.6	-10.8	5.9	16.7
K	17.6	12.1	-5.6	0.0	0.0	0.0
LDP	-2.3	42.2	44.4	35.3	29.7	-5.6
RDS	8.5	36.3	27.8	6.5	6.5	0.0
SR	-10.5	0.7	I1.1	0.0	-5.6	-5.6
SD	0.0	-11.1	-11.1	0.0	0.0	0.0
SM	-9.5	23.9	33.0	-5.2	0.0	5.6

SN = Special Needs RES = Resource REG = Regular and the Regular Class were over 40 percentage points difference for the Adolescent Maladjustment (AGM), Ego Strength (ES), Externalization (EXT), Learning Disabilities Prediction (LDP) scales.

At the 60+ cutoff, group differences between the Resource group and the Regular Class group were over 40 percentage points for the Ego Strength, and Learning Disabilities Prediction (LDP) scales.

An inspection of the data in Table 14 shows few negative numbers. This result indicates more psychopathology in the two Special Education groups, with the most in the Special Needs group.

In order to determine whether the observed differences between groups on the various scales were statistically significant a series of Chi-square analyses were conducted on all PIC scales for the 60+ and 70+ cutoff distribution data. The results of the Chi-square analysis of the cutoff data for the three educational groups are presented in Table 15.

On the distribution created by the 60+ cutoff procedure, there were a number of Chi-square analyses significant at the $p < .05$ level. One of the Factor scales, the Cognitive Factor was significant. For the Cognitive Development factor $X^2(2) = 18.500$,

$p <.001$.

Table 15

Significant Chi-Square Analyses Conducted on the 60+ Scale Score Cutoffs for All PIC Scales

Scale	Chi-Square	D.F.	Significance
Factor IV	18.500	2	0.000
Frequency	18.441	2	0.000
Adjustment	13.425	2	0.001
Achievement	42.550	2	0.001
Intelligence	25.257	2	0.001
Development	18.906	2	0.001
Delinquency	8.035	2	0.018
Psychosis	9.174	2	0.010
Social Skills	7.647	2	0.022
Ego Strength	16.795	2	0.001
L.D. Prediction	7.528	2	0.023
Somantic	8.128	2	0.017

For the Frequency scale, $X^2(2) = 18.5$ which was significant at the $p < .001$ level. For the Adjustment Screening scale, $X^2(2) = 13.425$, $p < .001$ level. All Cognitive Triad scales were significant: Achievement, $X^2(2) = 42.550$, $p < .001$; Intelligence Screening, $X^2(2) = 25.257$, $p < .001$; and Development, $X^2(2) = 18.906$, $p < .001$.

Three other Clinical scales were significant: Delinquency, $X^2(2) = 8.035$, $p < .018$ level; Psychosis, $X^2(2) = 9.174$, $p < .01$; and Social Skills, $X^2(2) = 7.647$, $p < .022$.

Three Experimental Scales were significant: Ego Strength, $X^2(2) = 16.795$, $p < .001$ level; Learning Disabilities Prediction, $X^2(2) = 7.528$, $p < .023$; and Somatization, $X^2(2) = 8.128$, $p < .017$.

On the distribution created by the 70+ T-score cutoff procedure, there are number of Chi-square analyses significant at the $p < .05$ level. The Chi-square analysis conducted on the distribution created by the 70+ cutoff for the three educational groups is presented in Table 16. Two scales were significant on the Factor scales: Factor II (Social Competence), $X^2(22) = 6.346$, $p < .05$; and Factor IV (Cognitive Development), $X^2(2) = 19.890$, $p < .001$.

Table 16

Significant Chi-Square Analyses Conducted on the 70+ Cutoffs for All PIC Scales

Scale	Chi-Square	D.F.	Significance
Factor II	6.346	2	0.042
Factor IV	19.890	2	0.001
Frequency	10.914	2	0.004
Adjustment	11.356	2	0.003
Achievement	23.287	2	0.001
Intelligence	23.329	2	0.001
Development	19.340	2	0.001
Delinquency	5.896	2	0.052
Ego Strength	7.022	2	0.030
L.D. Prediction	8.436	2	0.015

One validity scale, the Frequency scale, was significant on the 70+ cutoff Chi-square analysis, X^2 (2) = 10.914, $p < .004$. The Adjustment Screening Scale was significant, $X^2(2) = 11.356$, $p < .003$.

All Cognitive Triad scales were significant: Achievement, $X^2(2) = 23.287$, $p <.001$; Intelligence Screening, $X^2(2) = 23.329$, $p < .001$; and Development, X^2 (2) = 19.340, $p <.001$.

One other Clinical scale was significant: Delinquency, $X^2(2) = 5.896$, $p <.052$. Two Experimental Scales were significant: Ego Strength, $X^2(2) = 7.022$, $p <.03$; Learning Disabilities Prediction $X^2(2) = 8.436$, $p <.015$.

The answer to Question 4 determined from the various T-score analyses is that, clearly, the Special Needs group has the most elevated scale scores. The Cognitive Triad Scales (IS, DVL, SOM) were the scales on which the highest elevations were found for this group.

Question #5

Are there group differences in the total number of PIC scales with elevated scores (T-scores over 60 or 70)?

To answer this question the PIC scale scores above 60+ and 70+ were tallied for each subject for the three education groups on the 20 regular PIC scales. Table 17 presents the frequency distribution and medians for the analysis of T scores over 60 for the three educational groups. A visual inspection of the data in Table 17 indicates that there are substantial differences in the number of scale elevations per group. There were no subjects in the Special Needs group or the Resource group that had one or fewer PIC scales elevated above 60 while the Regular class group had six subjects with one or fewer scales elevated.

In order to determine whether these group differences were significant, a Kruskal-Wallis one way Anova was conducted on the T score over 60 plus data for the three educational groups. The results of the analysis found that X^2 (2) = 19.747, p <.0001, corrected for ties.

Table 18 presents the frequency distribution and group means for the analysis of 70+ cutoff for the three educational groups. A visual inspection of the data in Table 18 indicates that when the more conservative standard of two standards deviations above the mean is applied 14 subjects in the Regular Class group have less than two elevations while only 2 subjects in the Special Needs group had less than two scale elevations. At this

Table 17

Frequency Distribution of the Number of Scale Elevations over 60+ for the 20 Regular PIC Scales

	Special Needs	Resource Room	Regular Class
No. of 60+ Elevations	Median 11.0	Median 7.5	Median 3.0
0	0	0	5
1	0	0	1
2	0	1	2
3	1	1	3
4	0	2	1
5	0	3	0
6	1	2	3
7	1	1	0
8	1	2	0
9	2	1	0
10	1	0	0
11	3	2	3
12	1	1	0
13	0	0	0
14	1	0	0
15	3	2	0
16	2	0	0

Table 18

Frequency Distribution of the Number of Scale Elevations over 70+ for 20 Regular PIC Scales

No. of 70+ Elevations	Special Needs Median 7.0	Resource Room Median 1.5	Regular Class Median 0.5
0	0	4	9
1	2	5	5
2	1	1	1
3	0	2	0
4	2	0	0
5	1	1	2
6	1	2	0
7	2	1	0
8	0	0	0
9	3	0	0
10	2	0	0
11	1	1	1
12	1	0	0
13	1	1	0
14	0	0	0
15	1	0	0
16	1	0	0

cut off level, 9 subjects in the Resource group have elevations of two scales or less.

In order to determine whether these group differences were significant, a Kruskal-Wallis one way Anova was conducted on the 70+ T score data for the three educational groups. The results of the analysis was significant, X^2 (2)= 18.5273, p <.0001, corrected for ties.

In both the 60+ and 70+ cutoff analyses the scores for Regular Class group appear to be elevated by a few subjects who have a large number of scale elevations. This finding along with other individual analyses will be explored in more detail in the Case Studies section which follows.

Question 5 was answered in the affirmative. There were significant and substantial differences by group in the total number of PIC scale elevations above the T=60 or the T=70 cutoff. The results of this analysis are consistent with previous analyses indicating that the Special Needs group demonstrates the most psychopatholoy, the Resource group the next highest, and the Regular Class group the least.

External Validity: Walker Checklist

One of the purposes of the present study was to examine the external validity of the PIC by comparing it to more traditional measures of intelligence, adjustment and achievement. For this purpose, the Walker Behavior Problem Identification Checklist data was examined.

An analysis of variance was conducted on the Walker Total score for the three educational groups. The Walker Total scale is a screening scale comprised of five sub scales similar in function to the PIC screening scale, the Adjustment scale. The results of the analysis indicate that there was a significant main effect F (2,50) = 8.46, $p < .001$. Sheffe post-hoc pairwise contrasts were conducted to examine the differences between groups. The Regular Class group (mean = 47.8) differed from the Special Needs group (mean = 65.3), the F (2,50) = 16.52, $p <.001$, but the Regular Class group did not differ significantly from the Resource group (x = 54.0) at the .05 level. The Resource group differed significantly from the Special Needs group (x = 65.3), F (2,50) = 6.91, $p < .039$.

A Manova was conducted on the Walker Problem Behavior Identification Checklist Scale scores to determine if there was differences among the three educational groups on the five scales. An examination of the results shows that Rao's Approximate F Test using Wilks Lambda produced an F ratio of F (10,92) = 2.3959, p <.014. Differences between groups were examined using the Heck Greatest Root Statistic and no differences were found between groups at the .05 level.

The means for the Walker for the three educational groups have been presented in the descriptive statistic section in Figure 2. The result of the Walker analysis is similar to the analysis of the PIC. The Special Needs group shows the most psychopathology and the Regular Class group the least.

Teacher provided information on the Walker appears to differentiate the Special Education groups from the Regular Class group, but does not appear to differentiate the two Special Education groups from each other.

In order to examine the external validity of the PIC, the relationship between the Walker Scales and parallel scales on the PIC was examined by conducting Pearson Product Moment Correlations. Table 19 presents the Pearson Correlations between the Walker Scales and relevant PIC scales. Because of the relatively large number of comparisons, the analysis was conducted using the more conservative p < .01 level of significance.

One might logically expect PIC Factor I Undisciplined/Poor Self Control to correlate positively

Table 19

Pearson Correlations for the 13 Regular PIC Scales and the Walker Checklist Scales

	Walker Scales					
PIC Scale	Total Score	Acting Out	With-drawl	Distract-ibility	Peer Relat.	Immatur-ity
I	.32 *	.26 *	.21	.29 *	.22	.35 **
II	.34 *	.20	.31 *	.17	.32 *	.23 *
III	.19	.10	.27 *	.04	.04	.20
ADJ	.46 **	.36 **	.36 **	.28 *	.28 *	.41 **
SOM	.18	.08	.21	-.01	.26 *	.22
D	.35 **	.16	.33 *	.20	.33 *	.32 *
FAM	.13	-.16	.01	-.12	.00	-.16
DLQ	.25 *	.21 *	.09	.22 *	.10	.31 *
WDL	.29 *	-.04	.41 **	.00	.39 **	.14
ANX	.29 *	.21	.18	.21	.24 *	.28 *
PSY	.49 **	.29 *	.50 **	.25 *	.43 **	.33 *
HPR	.21	.18	.08	.01	.13	.32 *
SSK	.37 **	.32 *	.27 *	.24 *	.29 *	.25 *

* = significant at the .05 level
** = significant at the .01 level

with the Walker Total Score and with the Walker Acting out scale. Correlations significant at the .01 level were found between Factor I and Immaturity, r= .35. One would not expect Withdrawal to correlate with Acting Out and it did not at the .01 level of significance.

Social Incompetence, PIC Factor II, might reasonably be expected to correlate with Walker scales of Peer Relations, Withdrawal, and Immaturity. No correlations significant at the .01 level were found with any of the Walker scales.

PIC Factor III Internalization/ Somatic Concerns might logically be expected to correlate with Withdrawal. No correlations significant at the .01 level were found between Factor III and the Walker scales.

The PIC Adjustment Screening (ADJ) scale serves the same purpose as the Walker Total Scale score: it provides a score which indicates whether further psychological assessment is necessary. These scales should correlate if external validity is to be demonstrated. These two scales correlate at r=.46 which is significant at the .01 level. Other Walker scales which correlated with PIC Adjustment were: Acting Out, r=.36. Withdrawal, r=.36, and Immaturity, r=.41.

The PIC Somatic Concern (SOM) scale might not be expected to correlate with any particular Walker scale.

There were no positive correlations between PIC Somatic Concern (SOM) and the scales.

The PIC Depression (D) scale could be expected to correlate with several Walker scales because of the diverse symptoms associated with childhood depression. The only correlation significant at the .01 level was with the Walker Total score, r=.35.

The PIC Family Relations (FAM) scale should not be expected to correlate highly with the Walker because the Walker is a teacher completed checklist which focuses on classroom behavior. It provides no information about family relations. There was no correlation significant at the .01 level between the Family Relations (FAM) scale and any of the Walker scales.

The PIC Delinquency (DLQ) scale might logically be expected to correlate with all PIC scales with the possible exception of the Withdrawal scale. There were no positive correlations with the Walker scales significant at the .01 level.

One might have logically expected that the PIC Withdrawal (WDL) scale should positively correlate with the Walker Withdrawal scale. There was a positive correlation of r=.41. The Walker Peer Relations scale also correlated significantly with the Withdrawal scale, r=.39.

The PIC Anxiety (ANX) scale might be expected to correlate with the Walker Distractibility scale. No significant correlations were found between the Walker scales and PIC Anxiety.

The PIC Psychosis (PSY) scale might be expected to correlate with several Walker scales and in particular the Withdrawal scale. The PIC Psychosis (PSY) scale and the Walker Withdrawal scale correlated positively with r=.41. Other correlations significant at the .01 level were found with Walker Total, r=.49, and Peer Relations, r=.43.

The PIC Hyperactivity (HPR) scale might be expected to correlate with several Walker scales, in particular, the Distractibility and Acting Out scales. No significant correlations were found at the .01 level for these scales. The PIC Hyperactivity scale results may reflect clinical norming and definition rather than school definition.

One might expect the PIC Social Skills (SSK) scale to correlate with Walker Immaturity and Peer Relations scales. A significant correlation at the .01 level was found between the Social Skills (SSK) scale and the Walker Total score scale, r=.37.

An inspection of the data in Table 19 indicates that there were a total of 12 positive correlations (of 78 comparisons) significant at the .01 level.

The correlations generally were of a moderate level in the .35 to the .45 range. Lower correlations might be expected because of the differing respondents who evaluated behavior in different settings. The PIC data was provided by parents focusing on behavior at home while the Walker data was provided by the teacher focusing on classroom behavior.

In general, parallel scales of the PIC correlated with Walker scales lending support for the external validity of the PIC.

To further examine the external validity of the PIC by examining its correlation with more traditional measures of school performance, selected PIC scales representing intelligence, development and achievement were correlated with the Canadian Achievement Tests, Wechsler Intelligence Scale for Children - Revised, and the Otis-Lennon. Pearson R's were calculated between these measures and the selected PIC scales and are presented in Table 20.

To interpret the data presented in Table 20 with negative correlations, higher PIC T-scores indicate a problem in intellectual, developmental or achievement

Table 20

Pearson Correlations for the PIC Cognitive Scales with the Otis-Lennon, Canadian Achievements Tests, and WISC-R

	IV	ACH	IS	DVL
Otis Lennon DIQ	-.75 ** (42)	-.74 ** (42)	-.75 ** (42)	-.77 ** (42)
WISC-R VIQ	-.51 ** (35)	-.48 ** (35)	-.65 ** (35)	-.48 ** (35)
WISC-R PIQ	-.66 ** (35)	-.29 * (35)	-.67 ** (35)	-.59 ** (35)
WISC-R FIQ	-.65 ** (35)	-.44 ** (35)	-.74 ** (35)	-.59 ** (35)
CAT Reading	-.29 * (34)	-.51 ** (34)	-.21 (34)	-.39 * (34)
CAT Spelling	-.06 (34)	-.28 * (34)	.01 (34)	-.19 (34)
CAT Language	-.40 * (34)	-.53 ** (34)	-.36 * (34)	-.43 ** (34)
CAT Math	-.30 * (33)	-.44 ** (33)	-.19 (33)	-.34 * (33)
CAT Total	-.33 * (32)	-.49 ** (32)	-.21 (32)	-.37 * (32)

Note: WISC-R does not include Regular Class Group and CAT does not include Special Needs Group.

IV = Factor IV Cognitive Development

* = indicates significance at the .05 level

** = indicates significance at the .01 level

( ) = brackets indicates the number of subjects areas while higher scores on traditional measures of intelligence and achievement indicate more ability. Also in interpreting the data in Table 20 the Canadian Achievement Test data does not include the Special Needs group and the WISC-R data does not include the Regular Class group because this data was not available.

Because of the relatively large number of comparisons, the analysis was conducted using the more conservative p <.01 level of significance.

PIC Factor IV, the Cognitive Development Factor, correlated significantly at the .01 level with the Wechsler and Otis-Lennon measures: Otis-Lennon, r=-.75, WISC-R Verbal IQ, r=-.51, WISC-R Performance I.Q., r=-.66, WISC-R Full Scale IQ, r=-.65.

The PIC Achievement scale (ACH) correlated with all measures except WISC-R Performance and CAT Spelling at the .01 level of significance: Otis-Lennon, r=-.74, WISC-R Full Scale, r=.-44, CAT Reading, r=-.51, CAT Language, r=-.53, CAT Arithmetic, r=-.44, and CAT Total, r=-.49.

The PIC Intelligence Screening (IS) scale correlated highly with the Otis-Lennon and the WISC-R IQ's at a level similar to the correlations found in the Factor IV analysis: Otis-Lennon, r=.-75, WISC-R Verbal, r=-.65, WISC-R Performance, r=-.67, and WISC-R Full Scale, r=-.74.

The PIC Development (DVL) scale correlated with all intellectual measures and with one CAT scale: Otis-Lennon, r=-.77, WISC-R Verbal, r=-.48, WISC-R Performance, r=-.59, WISC-R Full Scale, r=-.59, and CAT Language, r=-.43.

An inspection of the data presented in Table 20 indicates that there were 16 of 36 correlations significant at the .01 level. Correlations were all significant between the Wechsler IQ's and the PIC scales and between the Otis-Lennon and the PIC scales with the exception of the correlation between WISC-R Performance and PIC Achievement. These correlations generally ranged from -.75 to -.59 except on the PIC Achievement (ACH) scale. Correlations between the PIC scales and the CAT scales generally were lower, but PIC Achievement did correlate significantly with all CAT scales except Spelling.

Moderate correlations could be expected because achievement tests do not attempt to measure intelligence, but they may reflect it indirectly. CAT Language correlated significantly with PIC Achievement and Development in the -.40 to -.50 range.

The results of the Pearson correlation analyses for the PIC Intelligence Screening (IS), Development (DVL), Achievement (ACH), and Factor IV scales with the more traditional measures of intelligence and school achievement lend strong support for the external validity of the PIC use as a school screening device. Correlations between traditional measures of I.Q. and the PIC Cognitive Triad and Cognitive Development scale were remarkably high considering the PIC is based on parental report, not on intellectual testing. Considered with the results of the Pearson Correlations analyses on the Walker Problem Behavior Checklist, the results present significant evidence for the external validity of the PIC.

Summary

The results of the study indicate that the parent provided information on the PIC can assist in the differentiation of Special Education students from Regular Class students and that the PIC correlates with more traditional school measures.

Specifically it was found that it was possible to differentiate the two Special Educational groups (Special Needs and Resource) from the Regular Class group on the basis of the PIC Adjustment (ADJ) screening scale.

Various PIC profile analyses indicated that the three educational groups were best differentiated on the basis of the Cognitive Triad (IS, ACH, DVL) scales. The Special Needs group had substantial elevations on the Cognitive Triad scales and had the most psychopathology as indicated by elevations on the other Clinical scales.

The various profile analyses conducted on the Resource group indicated that it was also best differentiated from the other two groups on the basis of the Cognitive Triad scales. Psychopathology as indicated by scale elevations on the other clinical scales was less for the Resource group than for the Special Needs group except on the Hyperactivity scale.

The profile analyses conducted on the Regular Class group indicated that this group exhibited little pathology as indicated by the PIC. A mean profile (nonclinical profile) was obtained with scores similar to the original nonclinical norming group. This result suggested that the PIC may be appropriately used with a Canadian population.

The external validity analyses conducted on the PIC indicates that PIC correlations with more traditional measures of intelligence, achievement, and adjustment lend support for the external validity of the PIC. Correlations with the WISC-R, Otis-Lennon, Canadian

Achievement Tests, and the Walker Checklist were of a magnitude that indicated support for its use in an educational setting.

Since the purpose of the current study was to examine validity of using the PIC as a screening device for the identification of children with Special Education needs in a rural school division, it appeared worthwhile to undertake a more individual and clinical analysis. Selected PIC profiles presented in the following chapter were analyzed to determine how the PIC would perform as a screening device on an individual basis.

CHAPTER VI

Case Studies of the PIC

The group or "average" results presented in the previous chapter provide support for using the PIC as a screening device for the identification of Special Education students. This chapter focuses on the application of the PIC as a screening device on a case by case basis. Of most interest to a Special Education administrator is the prevalence of Type I and Type II errors in the identification process. The failure in identifying a Special Needs student or the misidentification of a noneducationally handicapped student is an issue of high interest to a Special Education administrator. Students from each of the three educational groups are presented in this chapter. Two types of subjects have been selected for individual analysis. Some case studies are presented as fair representation of their educational groups as a whole. Other case studies have been selected for individual analysis because they may pose problems or are exceptions to general classification procedures suggested by average PIC results.

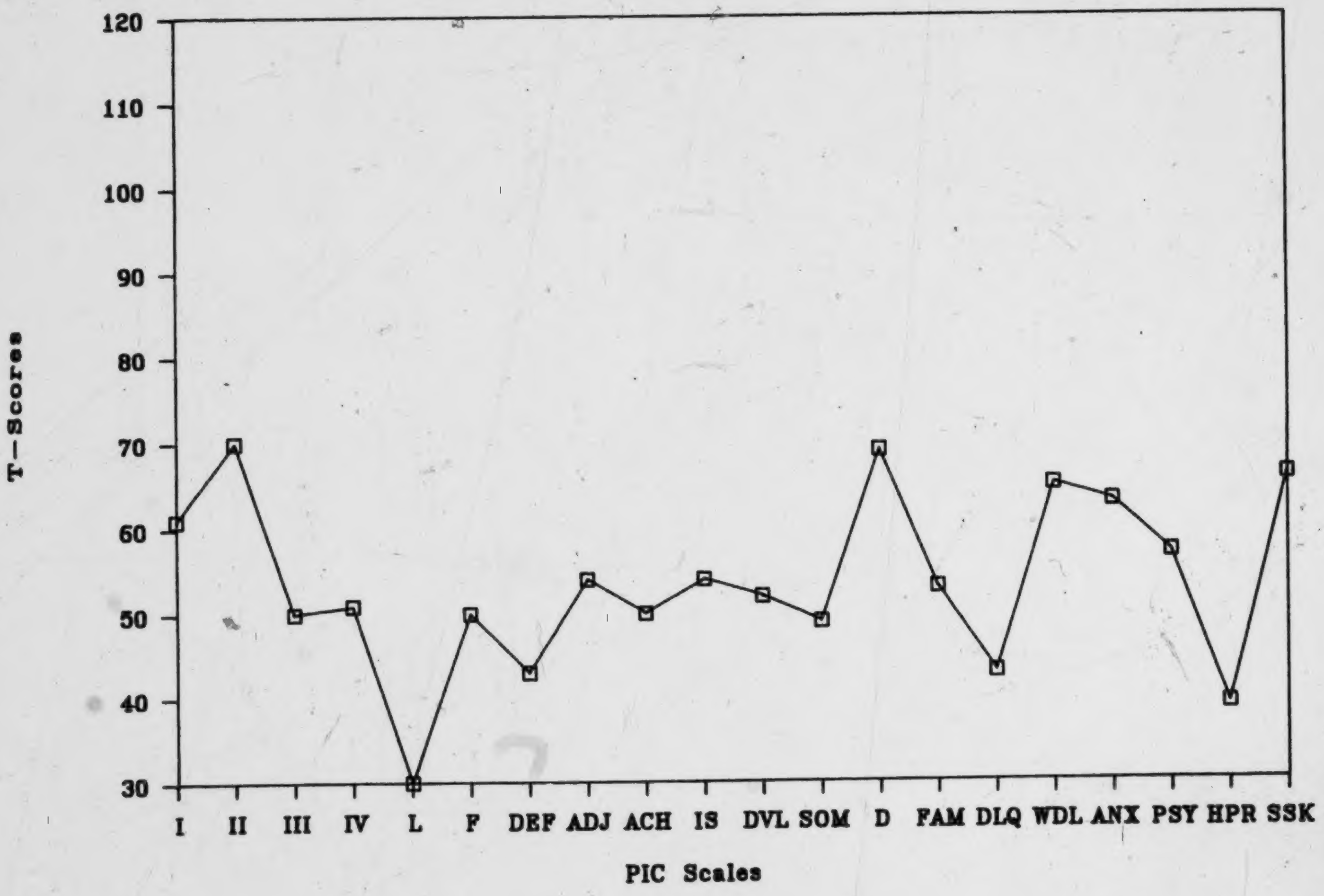
Regular Class Group Case Studies: Student #1 and Student #2

Student 1 is a 10 years 7 months old male in 4th grade. He was included in the Regular Class group because he has never repeated a grade, English is his first language, he has never received Special Education services, and his teacher does not consider him to have severe behavior problems. He obtained a DIQ of 118 on the Otis-Lennon as part of regular school division screening. His academic achievement has been at or above grade level with a relative strength in Language Arts.

Student 1's PIC profile completed by his mother is presented in Figure 3. An analysis of the Validity scales indicated that his profile would be considered a valid profile with T-scores in the average range for the Lie, Frequency and Defensiveness scales. Scores on the Cognitive Triad scales would not predict academic difficulties. T-scores on the Intelligence Screening, Achievement and Development scales all were within the average range.

Several elevations were noted on the Clinical scales with Depression, Withdrawal, Anxiety, and Social Skills scores elevated more than one standard deviation above the mean. The score of 69 on the Depression scale is close to the clinical cutoff range suggested in the PIC

Figure 3. The PIC profile for Student 1 (Regular Class).



Interpretive Guide beginning at T=70. The score of 65 on the Withdrawal scale is below the clinical range of 70 suggested in the PIC Interpretive Guide. The score of 63 on the Anxiety scale is below the T=70 cutoff suggested as the clinical range on the Anxiety scale. The score of 66 on the Social Skills scale is below the T=70 cutoff for clinical interpretation suggested in the Guide.

Student 1's teacher's report on the Walker produced a Total scale score which would not have resulted in a follow-up referral for psychological assessment. Student 1 obtained a scale score of 69 on the teacher completed Walker Withdrawal scale. This result is consistent with the parent completed PIC Withdrawal scale result.

In using the PIC 's Adjustment scale or the Cognitive Triad scales to identify Special Needs students, Student 1 would not have been identified. The elevated scores approaching the low end of the clinical range in Depression, Withdrawal, Anxiety and Social Skills might bring this student to the attention of the school counsellor as a student who might be "at risk", a student who might benefit from positive attention at both home and school.

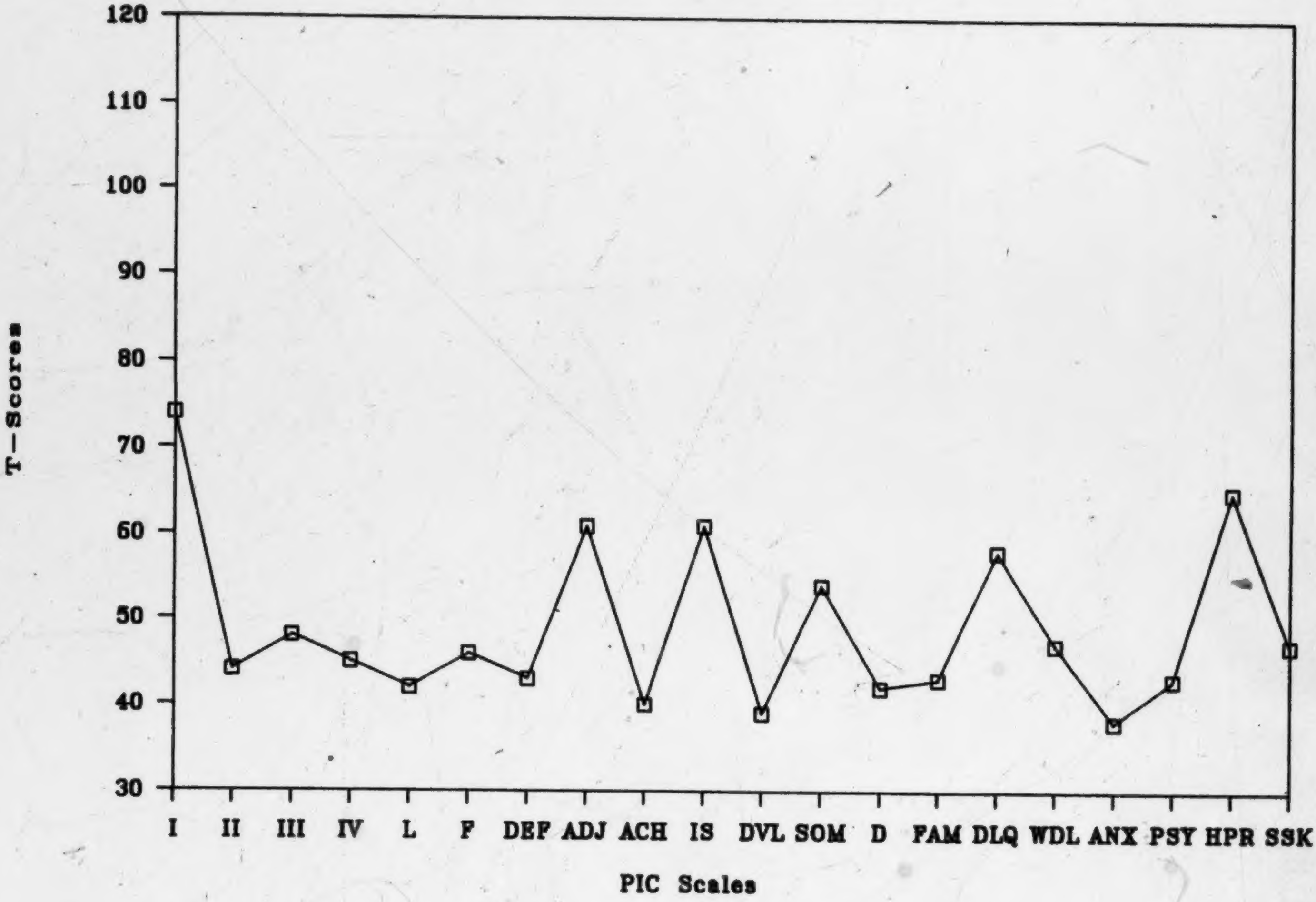
Student 1 is fairly typical of most Regular Class students; few had PIC scale elevations in the clinical range. Home and school reports appear fairly consistent.

PIC parental report would not have resulted in misidentification as a student requiring further testing because of potential Special Educational needs.

Student 2 is a 7 years 8 month old male in 2nd grade. His PIC profile which was completed by his mother is presented in Figure 4. He was included in the Regular Class group because he has never repeated a grade, English is his first language, he has never received Special Education services, and his teacher does not consider him to have severe behavior problems. He obtained a DIQ of 107 on the Otis-Lennon as part of regular school division screening. His academic achievement as tested by the CAT is at expected grade level in all subject areas.

The Validity scales scores indicate that Student 2's profile would be considered a valid profile with T-scores in the average range for the Lie, Frequency and Defensiveness scales. Student 2 obtained an Adjustment screening scale score of 61. This score is within the clinical range for this scale and would suggest the need for further psychological assessment as recommended in the PIC Interpretive Guide. Scores on the Cognitive Triad scales were within the average rage with the exception of the Intelligence Screening scale which was elevated to 61. T-scores on the Intelligence Screening scale become

Figure 4. The PIC profile for Student 2 (Regular Class).



clinically significant at the T=70 level according to the Interpretive Guide.

One of the Clinical scales was elevated in the interpretive range. The Hyperactivity scale score was 65. All other clinical scales were within the non-interpretive range. Student 2's teacher's report on the Walker produced Total and scale scores within the non-interpretive range. The Walker report would not result in the recommendation for follow-up psychological assessment.

If the the Adjustment screening scale score was used as the criteria for selecting Special Education students, Student 2 would be incorrectly identified as a student requiring assessment for Special Education services. The PIC report may prove useful as a basis for discussing Student 2's behavior at home to determine if there is a need for family assistance.

If the Cognitive Triad scales were used as the indicator of the need for Special Education services, Student 2 would not be identified as requiring Special Education assessment. Only one student in the Regular Class group would have been identified by clinical range cutoff on the Intelligence Screening or Development scales. This student's elevated Validity scales, however, would have resulted in a very cautious or no interpretation of the other scale scores.

It would appear that in conducting individual interpretations of the PIC profiles one might be able to avoid the problem of identifying Regular Class students as requiring testing for Special Education placement by adopting the strategy of interpreting the Cognitive Triad Scales when the Validity scales indicate a valid profile.

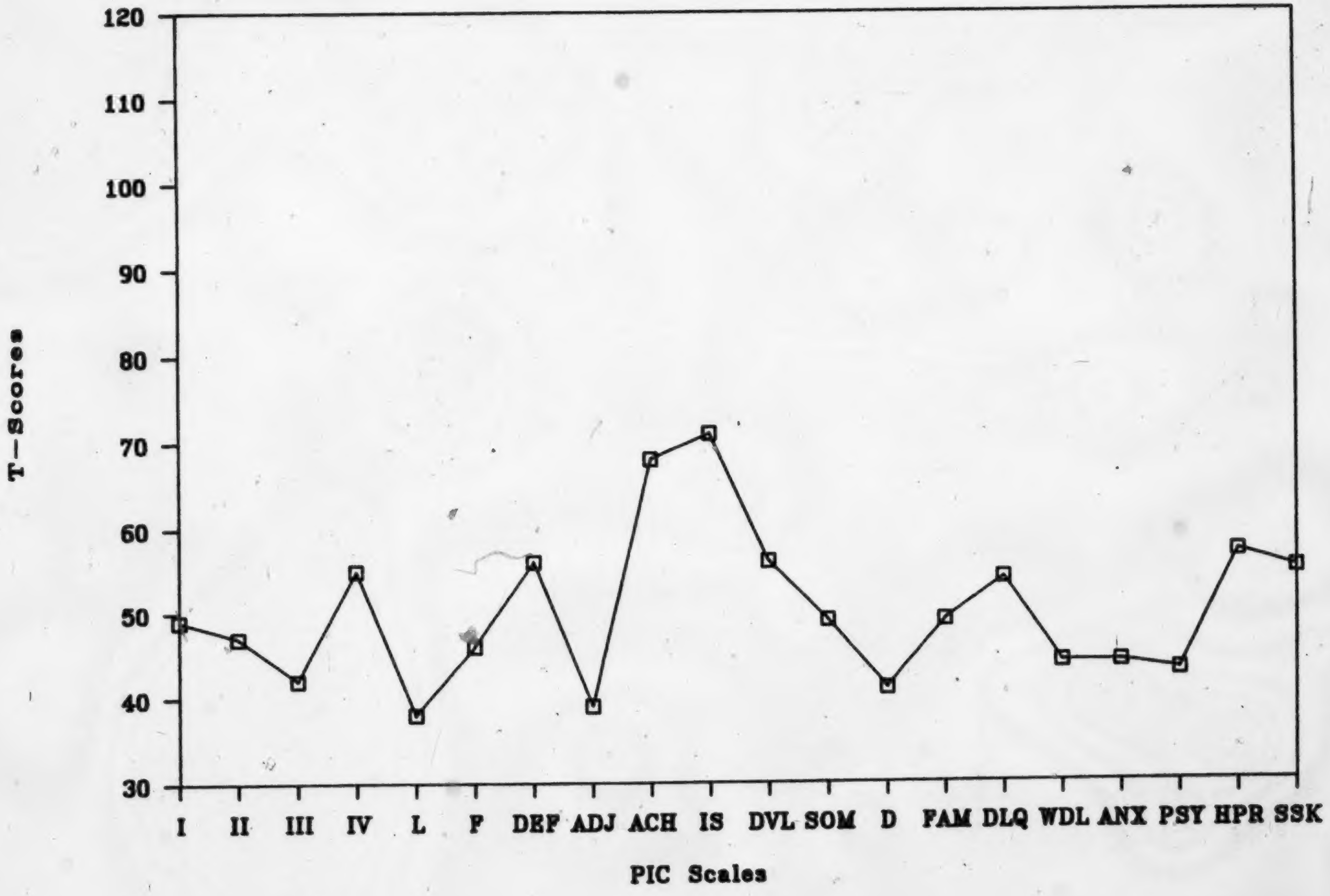
Resource Group Case Studies: Student #3 and Student #4

Student 3 is an 9 year 11 month old female student who has been diagnosed as presenting Learning Disabilities by psychological assessment. Her PIC profile is presented in Figure 5. She receives resource room assistance in reading three periods per week. She obtained a WISC-R Verbal IQ of 91, a Performance IQ of 114 and a full scale IQ of 101. Her CAT mathematics and reading scores are well below grade level.

Her Walker Total score was normal and would not indicate the need for further psychological assessment, all Walker scales were less than one standard deviation from the mean.

The PIC Adjustment screening score of 39 would not have indicated a need for further psychological assessment. The scores on the Intelligence Screening and

Figure 5. The PIC profile for Student 3 (Resource).



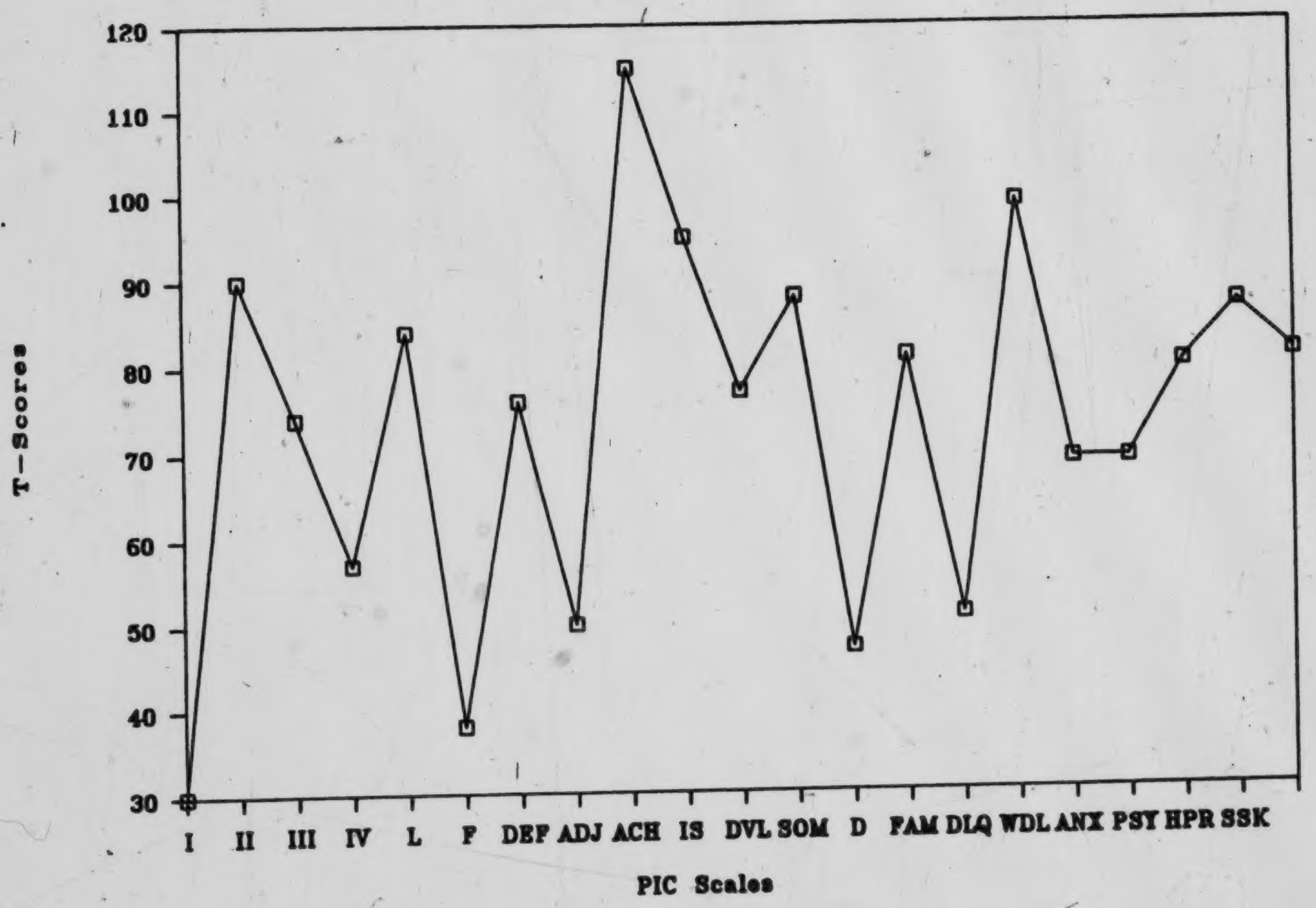
Achievement scales, but not Development scale fell within the interpretive range. All Clinical scales scores were within the normal range, within one standard deviation from the mean.

Student 3 then would have been correctly identified if screened by the Intelligence Screening scale and Achievement scale, but would have been incorrectly missed on the basis of the Adjustment Screening Scale.

Student 3 is an interesting case study because parental and teacher report indicated that this Learning Disabled student had no problems with social or emotional adjustment. Her behavioral profile, except for the elevation on the Intelligence Screening scale, is very similar to the Regular Class group's mean profile. Two other Learning Disabled students obtained scores on the Adjustment screening scale which would not have indicated the need for further psychological assessment.

Student 4 is a 15 year 5 month old male grade 7 student who has been assessed as presenting Learning Disabilities. He scored significantly behind his peers in CAT reading. He obtained an Otis-Lennon DIQ of 101, Wechsler Verbal IQ of 94, Performance of 92, and Full scale IQ of 92. Student 4's PIC profile is presented in Figure 6.

Figure 6. The PIC profile for Student 4 (Resource).



Teacher report on the Walker Problem Identification Checklist indicated a normal profile and would not have resulted in the recommendation for further psychological assessment. File records indicated, however, that there had been past school adjustment problems. Parent report on the PIC, unlike Student 3's parental report, indicates ten scale elevations exceeding two standard deviations above the mean. The parent reported on follow up that individual counselling has been ongoing for significant community adjustment problems.

Student 4 would have been identified on the basis of either the Adjustment screening scale score or on the basis of the Cognitive Triad scores. Only four Resource students would have been identified as requiring further assessment on the basis of Walker Problem Behavior Total score, in spite of the fact that over half the Resource group had at least three scale elevations two standard deviations above the mean. This result suggests that there might be a significant discrepancy in the report of home versus school behavior for this group, and that parent-provided information on the PIC might assist in the identification of Learning Disabled students.

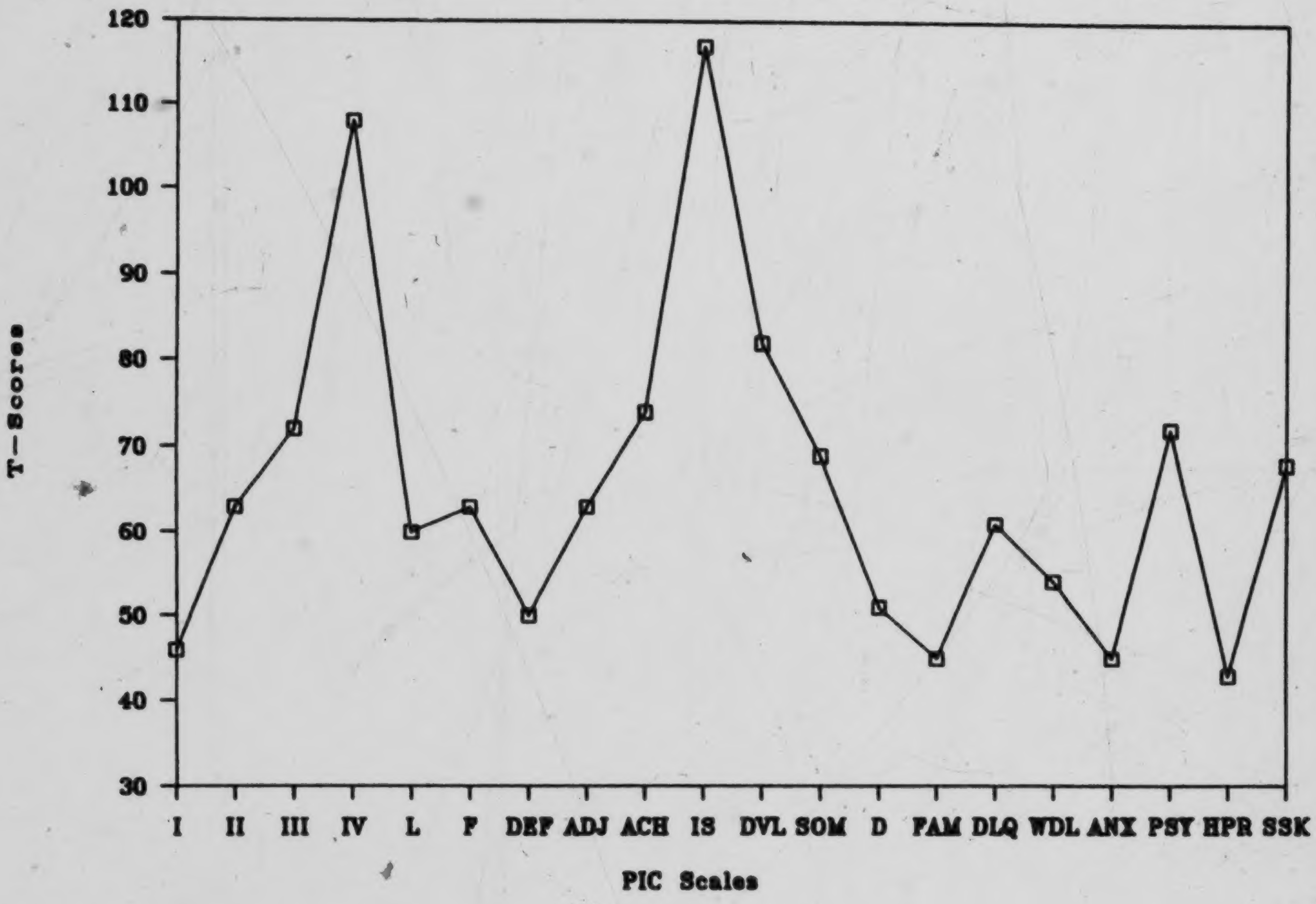
Resource group students, as represented by Students 3 and 4, have widely varying PIC profiles with no consistent pattern. No T-score cutoff or combination of cutoffs on the Adjustment Screening scale, Cognitive Triad scales, or Clinical scales would have resulted in the identification of all Resource group students. Clinical Scale elevations for Resource students presenting elevations were not consistent across subjects.

Special Needs Cases Studies: Student #5 and Student #6

Student 5 is an 11 year 6 month old male elementary student who has been assessed as functioning within the Borderline to Educable Mentally Handicapped range of intellectual abilities. His PIC profile is presented in Figure 7. The student is enrolled full-time in a Special Education class with parental permission and is being instructed in the Alberta Provincial Educable Mentally Handicapped Curriculum. He integrates into nonacademic aspects of school life with regular classes. He obtained an Otis-Lennon DIQ of 71 and Weschler I.Q.'s of verbal = 69, performance = 84, and full scale = 74.

Neither his Special Education teacher nor his parent considered him to present behavioral disorders, teacher report on the Walker would not result in a referral for further psychological testing. There were no scale elevations over one standard deviation above the mean.

Figure 7. The PIC profile for Student 5 (Special Needs).



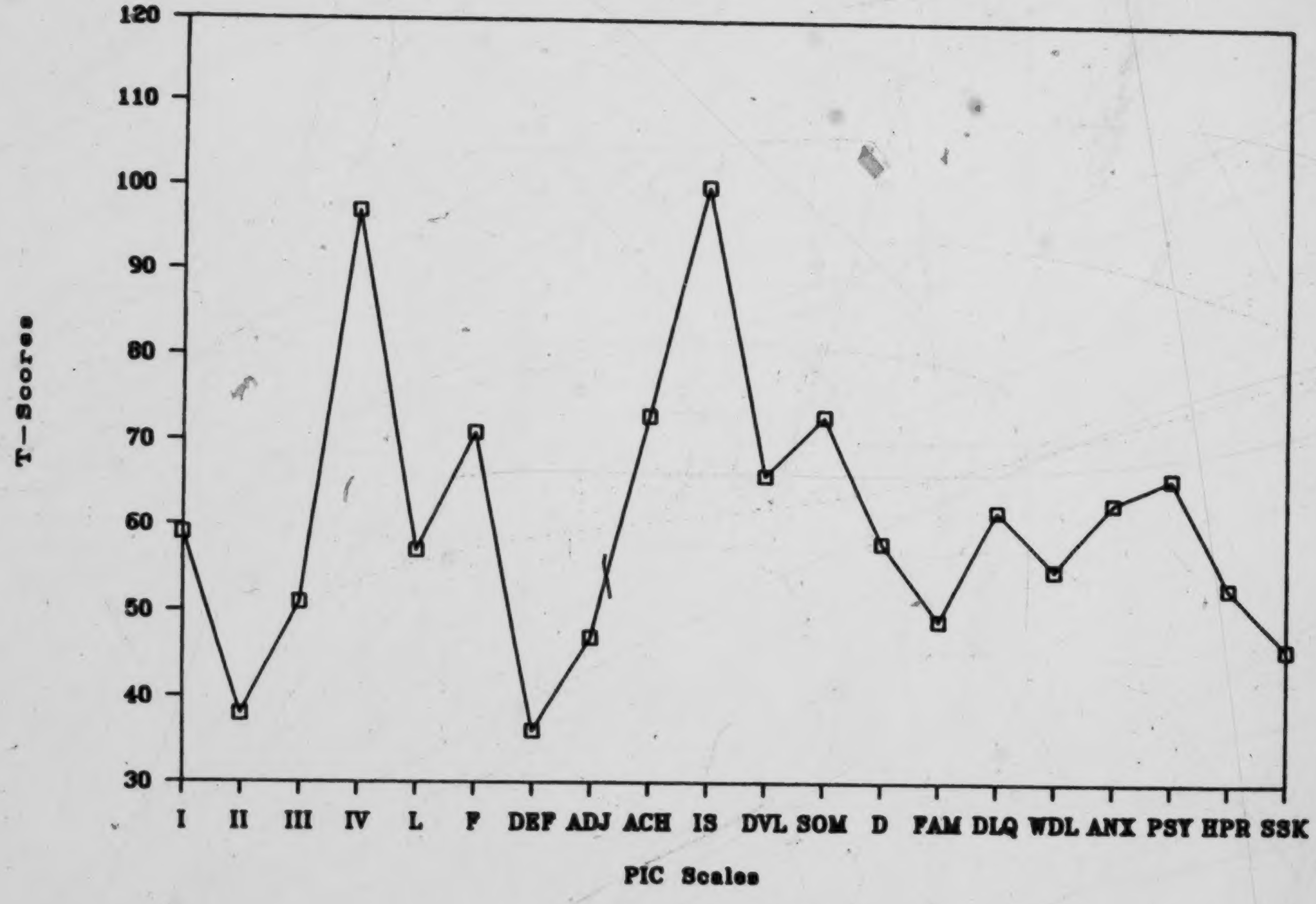
He is typical of many Special Needs students with very high elevations within the clinical range in the Cognitive Triad Scales (ACH=77, IS=117, DEV=92). A score of 81 on the Adjustment screening scale would have indicated the need for further psychological assessment. Parental report on the Clinical scales indicates scores within the clinical range on the Psychosis (PSY=117) and Social Skills (SSK=72) with elevations approaching the clinical range on the Withdrawal and Depression scales.

Subject #5 is representative of the eight students in Special Needs classes who would not have been identified by teacher report on the Walker as requiring further psychological assessment, yet parental report suggested significant psychopathology as indicated by the number of scale elevations within the clinical range.

Student 6 is a 10 year 2 month old female student enrolled full time with in a Special Needs class. Her PIC profile is presented in Figure 8. She has been assessed as functioning within the Borderline range of intellectual abilities. She obtained an Otis-Lennon DIQ of 82 and obtained Weschler IQ scores of verbal = 64, performance = 92 and full scale = 76. She has received speech therapy and has just begun reading.

Student 6 would not have been identified as requiring further psychological assessment on the basis

Figure 8. The PIC profile for Student 6 (Special Needs).



of the PIC Adjustment screening scale (ADJ=47) nor on the basis of Total Walker score (Total=54). Like other Special Needs students, Student 6 presented significant elevations on the Cognitive Triad scales (ACH=73, IS=100, and DEV=66) Unlike other Special Needs students, she had only one elevation in the clinical range on non-Cognitive Triad Scales. She obtained a Somatic scale score of 72 which is at the bottom of the clinical range for this scale which starts at T = 70.

Special Needs students appear to be readily identifiable on the basis of the Cognitive Triad scales. These subjects tended to have elevations on other Clinical scales, but no particular pattern emerges. Individual differences appear significant. There seems to be a large discrepancy in parental behavior report on the PIC compared to teacher behavioral report on the Walker. This difference may possibly be due to Special Education teachers evaluating the student's behavior against the behavior of their Special Education classmates.

Summary of Case Study Analysis

Individual profile analyses and case studies indicated that the Adjustment screening scale of the PIC may not be appropriately used as the main criterion for further psychological testing. If this scale is used as it is in clinical settings, Special Education students may not be identified or non-educationally handicapped students may be incorrectly identified as requiring Special Education services. A strategy involving an examination of the Validity scales and the Cognitive Triad scales may prove more useful in an educational setting than an inspection of the Adjustment screening scale.

Individual profile analyses also indicated that although the two Special Education groups exhibited more psychopathology as measured by the PIC, there was wide variation in the individual profiles. Little support was found for specific Special Education personality profiles.

The information provided by the PIC may prove a valuable addition to the screening process. The PIC has potential to add to the background data which would highlight the need for further assessment and provide information on the type of assessment to be conducted.

For example, an administrator may be concerned about a student presenting behavioral difficulties, poor achievement, and a group Otis-Lennon score of DIQ=85. Parental report indicating normal Cognitive Triad scores combined with significant elevations on the Depression and the Family Relations scales may indicate that adjustment problems are not entirely due to educational variables. Special Education screening may not be the most desirable first intervention to assist this child, particularly when testing may not be conducted for several months.

Special Education students who are often difficult testing subjects are identified on the basis of individual intelligence and achievement testing. PIC parental report can provide an additional source of information supporting Special Education placement decisions when the student is not cooperative in testing or when the validity of test result is questioned.

Special Education students may require more than academic support. The PIC parental report can support testing results, but it can also highlight problems such as anxiety, depression, or delinquency which may have significant impact on school adjustment and instructional strategies. School reports of aberrant behavior can be compared to parental reports of behavior to help investigate the source of the problem.

The behavioral and personality information provided by the PIC appears to be very useful in the case of new students who are having difficulties in school. It is not unusual for a new student to arrive with little background information on past emotional and academic adjustment. The additional information provided by the PIC may assist trained psychometricians in deciding how to use limited testing resources.

In addition to supporting or raising questions about traditional Special Education testing results, the PIC appears to provide valuable personality and behavioral information relevant to a child's education.

The following chapter will focus in more detail on the obtained results, synthesize them, and provide some possible explanations for the results.

CHAPTER VII

Summary

Overview

The early identification of students requiring Special Education services is considered educationally crucial. School psychologists have observed that there are a substantial number of referrals for Special Education services for children who do not meet Special Education placement criteria.

The problem of effectively screening children with Special Education needs has become a salient issue for school psychologists. The problem is amplified in rural school districts where there are no psychologists or where specialists must travel hundreds of kilometers to schools or request that the parents drive hundreds of kilometers to major population centers.

There has been a strong legal and social thrust to involve parents in all aspects their children's education. The U.S. Education of All Handicapped Children Act of 1975 states that parents must be involved in the evaluative process. This U.S. act has had significant influence on current Canadian Special Educational directions. Unfortunately, parents are often involved only after an assessment has been conducted.

The current investigation was undertaken to determine whether information provided by parents on the Personality Inventory for Children (PIC) would have potential for assisting in the screening of students for Special Education services. The authors of the PIC indicated that the PIC may have some application in educational settings, yet research has not adequately demonstrated its validity for use in educational settings.

The potential for the use of the PIC in the schools was seen as that of an instrument which might assist in screening Special Education students, involve parents, not demand teacher time, not require the cooperation of the child, and at the same time also provide valuable behavioral and personality information.

The present study sought to determine whether parent provided information on the PIC would differentiate among 53 students in grades two through seven receiving Resource Room services (diagnosed Learning Disabilities), Special Needs placement (intelligence in the Borderline to Educable Mentally Handicapped range), or students never having Special Educational needs. The study also undertook to examine the external validity of the PIC by comparing it to more traditional measures of academic adjustment and achievement.

Interpretation of the Results

The current study found support for the use of the PIC to identify Special Education students. It has potential for use in the screening process. Analysis conducted on the Adjustment screening scale indicated that the two Special Education groups could be differentiated from the Regular Class group on this screening scale of the PIC.

Individual profile and scale analysis, however, indicated that there were a number of Special Needs and Resource group students who would not be identified on the basis of general adjustment problems. The results of this study suggest that PIC Adjustment screening scale can not be used as it is in clinical settings as a main indicator for the need for further assessment.

Some Special Education students did not exhibit psychpathology. They obtained Clinical scale scores similar to those of Regular Class students who were screened on the basis of having no severe behavioral or emotional problems at school. These results will be summarized under the Clinical scale discussion of personality type.

The Cognitive Triad

The most important finding of the various analyses conducted on PIC profile differences between groups was the significant differences found between educational groups on the Cognitive Triad scales: Intelligence Screening, Achievement and Development. The most striking contrasts were found on the Intelligence Screening scale analyses, where the differences were the greatest between the Special Needs group and the two other groups.

Little support was found for the use of the Intelligence Scale vs the Achievement scale discrepancy as a indication of Learning Disabilities. This result is similar to the findings of Bennet and Welsch (1981). Few researchers have replicated the results of Wirt, Lachar, Kleindinst, and Seat. (1977).

Parent provided information on the Cognitive Scales appears to have potential for use in the identification of children who require Special Education services. The Intelligence screening scale, in particular, appears to have potential to fulfill the screening function in Special Education settings that the Adjustment screening does in clinical screening.

A Special Education Personality Type: The Clinical Scales?

The varying individual profiles found within the Resource Group lend support to the findings of Porter and Rourke (1985) who hypothesized that there is no one type of Learning Disability personality. They found that over half of Learning Disabled students they studied did not have psychopathology as indicated by the PIC. They also hypothesized that the contrary and inconclusive research in this field is due to the incorrect assumption of educators and mental health professionals who have held that Learning Disabled students are particularly prone to emotional or behavioral difficulties.

The current finding of significant elevations for the Learning Disabled groups is consistent with the findings of Murphy (1984), Clark (1982), and Dekrey (1982).

It was found that most students with diagnosed intellectual abilities in the Borderline to Educable Mentally Handicapped range obtained Adjustment screening scale scores within the clinical range. This was not an unexpected result. Intellectually handicapped students have been differentiated from their regular class peers on the basis of teacher report of adaptive behavior on instruments such as the AAMD Adaptive Behavior Scale (Fogelman, 1975).

Researchers have hypothesized that intellectual ability is important for reality testing and understanding social situations. Intellectual ability is important for successful social integration. Adjustment scale elevations for intellectually limited students are consistent with those of Murphy (1984), Froman (1973), and Clark (1982) who studied the profiles of Educable Mentally Handicapped students.

The finding that Special Needs students had a higher level of general adjustment problems than Learning Disabled students is consistent with the findings of Clark (1982). The finding that the Learning Disabled group's Hyperactivity scale mean score was in the clinical range is also consistent with the results of Clark (1982) who found a significantly higher evaluation on the Hyperactivity scale with the Educable Mentally Handicapped group.

The fact that some students in the current study in the Special Needs group would not have been identified on the basis of Adjustment screening score lends support to the scant previous research on the personality profiles of the Mentally Handicapped. Previous research indicates that although Mentally Handicapped students have a higher rate of adjustment problems compared to their non-handicapped peers, there are widely varying individual differences in the type of and degree of adjustment problem.

The current study Special Needs profile of extreme elevation on the Intelligence Screening scale combined with elevations on the Cognitive Development Factor, Development, Achievement, and Psychosis scales is consistent with the profiles found by Clark (1982) and Murphy (1984). Webb (1977) found that Mentally Handicapped students had elevations on the Development scale. Some researchers, however, with have found elevations on the Social Skills scale for Mentally Handicapped groups.

Mentally Handicapped students do appear to be best identified on the basis of intelligence, achievement and developmental variables on the PIC.

Apart from the Resource group's elevation on the Hyperactivity scale, neither Special Education group obtained mean scores within the clinical-interpretive range on Clinical scales other than the Cognitive Triad scales. In general, the most pathology as indicated by scale elevations was found for the Special Needs group, the next highest elevations for the Resource group, and the least for the Regular Class group. Analysis of the Family Relations scale indicates that family relation differences do not contribute to group differences in pathology on the Clinical scales.

The Regular Class group, which was screened for adjustment problems at school, obtained a group score which would not have indicated the need for further assessment. Individual analysis, however, indicated that several students had significant elevations on the Adjustment and Clinical scales which could not be explained by randomness of parental response or the attempt to manipulate results.

One possible explanation is based on the situation specificity of behavior. It is not unusual to find students who are reasonably well adjusted at school to have behavioral problems at home. Teacher and parental report have been demonstrated to vary.

The analyses of the Experimental scales indicated some group differences of a low order. This result is not surprising in that these scales were not included in the regular PIC because of their failure to consistently identify the concepts they represent. The pattern on the Experimental scales followed that of the regular scales. The most psychopathology was found in the Special Needs group and the least in the Regular Class group.

External Validation

Convergent and discriminant validation of the PIC was sought by correlating the appropriate PIC scales with more traditional measures of school achievement and adjustment. The results of the external validity analyses indicated that the Cognitive Triad scales do correlate well with more traditional measures of intelligence and achievement. WISC-R and Otis-Lennon correlations with the Cognitive Triad scales were found to be of the order of r=75. The Canadian Achievement Tests correlated the highest with the PIC Achievement scale on an order of r=45.

The results of the intellectual and achievement validation analyses support the findings of Wirt et. al. (1977) and are in marked contrast to those of Beck and Spruill (1987) who found WISC-R correlations in the 30 to 40 level for children referred to a university clinic.

Clinical scales correlations with the Walker Behavior Problem Identification Checklist were of a magnitude that provided support for construct and external validity.

The results of the external validation analyses on the PIC scales provide support for PIC external validity.

Parental Acceptance

Parental report indicated that the PIC was favorably received by most parents. A valid and reliable Special Education screening device has little use if the respondents find the instrument onerous or too difficult to complete.

Parents in a rural school district understood the need for an effective screening device and did not object to completing a 640 item questionnaire.

Researchers such as Clark (1982) have reported return rates as low as 25%. The 70% return rate in the current study may be due to parental understanding of the need for the instrument. The rate may also be due to the fact that the researcher was known a an employee of the local school division and not an outside researcher perceived as having no particular interest in the community.

Limitations and Suggestion for Further Research

The current study is limited in its generalization in several respects. The major limitation is the small number of subjects which necessitated scale grouping analysis due to the problem of the limited subjects in relation to the numerous PIC scales. Another limitation is that the study involved the identification of previously assigned students. Perceptions resulting from classification and placement may have influenced the results. It would be desirable to conduct a study involving PIC assessment before placement. It would also be desirable in a future study to match subjects on the variable of sex as well as age.

In Canada, education is a provincial domain. Alberta allows for noncategorical placement and funding of students requiring Special Education services, criteria for Special Education placement vary from school district to school district, and province to province. The classification of Special Needs and the definition of Learning Disabilities may not be applicable in other jurisdictions.

Conclusion

The results of the current study lend support for the use of the PIC in the screening process for the identification of children who require Special Education services. It is an instrument that appears to have validity for use with a rural Canadian population. Evidence for the construct and discriminant validity of the PIC was found. The PIC was not intended and should not be used as the sole device used in a placement decision, but it does hold promise to provide valuable screening information when used in conjunction with intellectual and achievement testing. The PIC was accepted by the large majority of parents. The PIC has potential to involve the parents in the educational assessment process. In the hands of a competent diagnostician, the PIC may assist in early identification of children with special needs.

References

Achenbach, T.M. (1978). Psychopathology of childhood: Research problems and issues. _Journal of Consulting and Clinical Psychology_, _46_(4), 759-776.

Achenbach, T.M. (1981). A junior MMPI? _Journal of Personality Assessment_, _45_, 332-333.

Alessi, G.J. (1980). Behavioral observation for the school psychologist: Responsive-discrepancy model. _School Psychology Review_, _9_, 31-45.

American Psychological Association (1974). _Standards for educational and psychological tests_. Washington, D.C.: Author.

Anastasi, A. (1976). _Psychological testing_ (4th ed.) New York: Macmillan.

Applebee, A.N. (1971). Research in reading retardation: Two critical problems. _Journal of Child Psychology and Psychiatry and Allied Disciplines_, _12_, 91-113.

Bardon, J.I., & Bennett, V.C. (1974). _School psychology_. New Jersey: Prentice-Hall.

Beck, B.L., & Spruill, J. (1987). External validation of the cognitive triad of the Personality Inventory for Children: Cautions on interpretation. _Journal of Consulting and Clinical Psychology_, _55_, 441-443.

Beed, T., & Stimson, R.J. (1985). Survey interviewing: theory and techniques. Sydney: George, Allen, & Uwin.

Begab, M.J. (1975). The mentally retarded and society: trends and issues. In M.J.Begab & S.A. Richardson (Eds). The mentally retarded and society. Baltimore: University Park Press.

Bennet, T.S., & Welsh, M.C. (1981). Validity of a configural interpretation of the intellectual screening and achievement scales of the Personality Inventory for Children. Educational and Psychological Measurement, 41, 863-868.

Bergan, J.R. and Tombari, M.L. (1976). Consultant skill efficiency and the implementation of outcome of consultation. Journal of School Psychology, 14(1), 3-14.

Berman, W.B. (1979). Behavioral correlates and validity of the PIC--Spanish translation. Unpublished doctoral dissertation, Indiana University.

Bielefeld, R. (1972). The constructs of masculinity and femininity as measured by the Personality Inventory for Children. Dissertation Abstracts International, 32, 6635B-6636B.

Block, J. (1965). The challenge of response sets. New

York: Appleton-Century-Crofts.

Bryan, T. & Bryan, J.H. (1976). Understanding Learning Disabilities Port Washington, NY: Alfred Publishing Co.

Canadian Achievement Tests (1982). Scarborough, Ontario: Canadian Test Centre/ McGraw-Hill Ryerson Limited.

Carten, R.L. (1974). The construction of an adolescent general maladjustment scale for the Personality Inventory for Children. Dissertation Abstracts International, 34, 5670B.

Casteneda, A., McCandles, B.D., & Palermo, D.C. (1956). The children's form of the manifest anxiety scale. Child Development, 27, 317-326.

Chalfant, J.C., & Scheffelin, M.A. (1969). Central processing dysfunctions in children. Washington, D.C.: U.S. Government Printing Office.

Cichon, M.J. (1980). Screening for personality disturbances in young children using the Personality Inventory for Children and related empirical correlates (Doctoral Dissertation University of Minnesota, 1979). Dissertation Abstracts International, 40, 4473-4474.

Clarke, E. (1982). Construct validity and diagnostic potential of the PIC with Emotionally Disturbed, Learning Disabled, and Educable Mentally Retarded

Children. Unpublished doctoral dissertation, Michigan State University.

Cronbach, L. J. (1956). Assessment of individual differences. *Annual Review of Psychology*, *7*, 173-196.

Culbert, J., & Gdowski, C.L. (1982), February. Reading retardation: An initial investigation with the Personality inventory for Children. Paper presented at the Tenth Annual Meeting of International Neuropsychology Society, Pittsburg, Pennsylvania.

Darlington, R.B. & Bishop, C.H. (1966). Increasing test validity by considering inter-item correlations. *Journal of Applied Psychology*, *50*, 322-330.

DeBell, S., & Vance, H. (1977). Concurrent validity of three measures of arithmetic achievement. *Perceptual and Motor Skills*, *45*, 848.

Dehorn, A. B., Lachar, D., & Gdowski, C. L. (1979). Profile classification strategies for the Personality Inventory for Children. *Journal of Consulting and Clinical Psychology*, *47*, 874-881.

DeKrey, S. J. (1982). Construct validity and educational implications of the Personality Inventory for Children (PIC) shortened form version. *Dissertation Abstracts International*, *43*, 3844A.

DeKrey, S. J. and Ehly, S. W. (1981). Factor/cluster classification of profiles from Personality Inventory for Children. Psychological Reports, 48, 843-846.

DeKrey, S. J., McCollum, D., & Martin, F. (1983). Educational applications of the Personality Inventory for Children - Revised format (PIC-R). Paper presented at the annual meeting of the National Association of School Psychologists, Detroit, Michigan.

Dollinger, S. J., Goh, D. S., & Cody, J. J. (1984). A note on the congruence of the WISC-R and the cognitive development scales of the Personality Inventory for Children. Journal of Consulting and Clinical Psychology, 52, 315-316.

Downey, C. (1979). Differential diagnoses of mildly handicapped. Dissertation Abstracts International, 40, 161.

Dreyer, R. M., Lewis, P. M., Rich, T. A., Miller, K. S., Reid, M. P., Overlade, D. C., Taffel, C. and Flemming, E. L. (1964). Behavioral classification project. Journal of Consulting Psychology, 28, 1-13.

Elementary and Secondary Education Act of of 1970, Public Law 91-230. (1970).

Eysenck, S. B. G. (1965). Manual for the Junior Eysenck

Personality Inventory. London: University of London Press.

Fitzgerald, G. E. (1979). The use of objective observational data in the identification of emotionally disabled pupils. in *The identification of emotionally disabled pupils: data and decision making*. Division of Special Education, Iowa Department of Public Instruction and Midwest Regional Resource Center, Des Moines, Iowa.

Fogelman, C. J. (Ed.).(1975). *Manual for the AAMD Adaptive Behavior Scale 1975 Revision*. American Association on Mental Deficiency: Washington, D.C..

Forness, S. R. (1976). Behavioristic orientation to categorical labels. *Journal of School Psychology*, *14*, 90-96.

Forster, M. (1986). Personality Inventory for Children and Reading Difficulties. Unpublished masters thesis, University of Alberta, Edmonton.

Frame, R. E. (1979). Interclinician agreement and bias effects of race, socioeconomic status, and school achievement on school psychologists' diagnostic and treatment recommendations. Unpublished doctoral dissertation, Michigan State University.

Froman, P. K. (1971). The development of a depression scale for the PIC. Unpublished manuscript, University of Minnesota.

Froman, P. K. (1973). The development of a mental retardation scale using the PIC. Dissertation Abstracts International, 33, 5013-5014.

Gdowski, C. L. (1978). Typologies of childhood psychopathology and their relationship with the Personality Inventory for Children. Dissertation Abstracts International, 38, 5566-B.

Goh, D.S., Cody, J.J, & Dollinger, J. (1984). PIC Profiles for Learning Disabled and Behaviour-Disorder Children. Journal of Clinical Psychology, 40, 3, 837-841.

Goldfried, M.R. and Kent, R.N. (1972). Traditional versus behavioral personality assessment: A comparison of methodological and theoretical assumptions. Psychological Bulletin, 77, 409-420.

Grossman, H.J. (1973). Manual on terminology and classification in mental retardation. Special Publication Series No. 2, American Association on Mental Deficiency. Washington, D.C.

Guglielmi, R.S. (1973). Costrizione di una Scala di Desireabilita' Socaiale. Unpublished master's thesis. University of Rome, Italy.

Guilford, J.P. (1959). Personality. New York: McGraw-Hill.

Hallahan, D.P., & Kauffman, J.M. (1977). Labels, categories, behaviors: ED, LD and EMR reconsidered. Journal of Special Education, 11(2), 139-149.

Hammill, D. D. (1976). Defining "LD" for programming purposes. Academic Therapy, 12(1), 29-37.

Hampton, A. (1970). A longitudinal study of personality of children who become delinquent using the Personality Inventory for Children. Dissertation Abstracts International, 30, 4792B.

Harrington, R.G., and Marks, D. (1985). The adjustment scale of the PIC as screening measure for behaviorally disordered children. Psychological Record, 35, 465-470.

Hathaway, S.R. and McKinley, J.C. (1951). The Minnesota Multiphasic Personality Inventory Manual. (Rev.Ed.). New York: The Psychological Corporation.

Hayes, N. (1971). The construction of an introversion-extroversion scale for the Personality Inventory for Children. Dissertation Abstracts International, 32, 1844B.

Hegeman, G. (1976). A PIC scale for hyperactive children. Unpublished doctoral dissertation, University of Minnesota.

Huelsman, C.D. (1970). The WISC subtest syndrome and poor readers. Perceptual Motor Skills, 30, 535-550.

Hobbs, N. (1975). *Issues in the classification of children* (Vols. 1 & 2) San Francisco: Jossey-Bass.

Huelsman, C. D., (1970). The WISC subtest syndrome and poor readers. *Perceptual Motor Skills*, *30*, 535-550.

Johnson, D. M. (1971). Personality differences between low and high achieving boys using the Personality Inventory for Children. *Dissertation Abstracts International*, *32*, 241A.

Johnson, D. M., & Shove, G. R. (1971). Perceptual, cognitive, and emotional factors as concurrent predictors of achievement in elementary age boys. *Minnesota Reading Quarterly*, *16*, 57-77.

Kassel, J. S. (1971). An ego strengths scale for the Personality Inventory for Children. *Dissertation Abstracts International*, *32*, 3006B.

Kaufman, A. S. (1975). Factor structure of the WISC-R at eleven age levels between 6 1/2 and 16 1/2 years. *Journal of Consulting and Clinical Psychology*, 1975, *43*, 135-147.

Kaufman, A. S. (1979). *Intelligent testing with the WISC-R*. New York: John Wiley and Sons, Inc..

Keller, H. R. (1980). Behavior consultation, In J.C. Canoley (Ed.), *Consultation in schools: Theory, research, technology*. New York: Academic Press.

Kimmins, R., Hunter, W. J. & MacKay, A. W. (1985). Educational legislation and litigation pertaining to the practice of school psychology in Canada. Canadian Journal of School Psychology, 1, 1-10.

Klinedinst, J. K. (1972). Relationships between MMPI and PIC data from mothers of disturbed children. Dissertation Abstracts International, 32, 4860.

Klinedinst, J. K. (1975). Multiphasic measurement of child personality: Construction of content scales using the PIC. Journal of Consulting and Clinical Psychology, 43, 708-715.

Lachar, D. (1971). The development of a childhood psychosis scale using the PIC. Dissertation Abstracts International, 31, 4340.

Lachar, D. (1974). Construction of an academic achievement scale for the PIC. Unpublished manuscript.

Lachar, D. (1982). An introduction to the Personality Inventory for Children revised administration booklet: Factor derived and shortened profile scales. Detroit, Michigan: Lafayette Clinic and Wayne State Clinic.

Lachar, D. (1984). Personality Inventory for Children-Revised format manual supplement. Los Angeles: Western Psychological Services.

Lachar, D., Abato, R., & Wirt, R. D. (1975). The construction of a delinquency scale for the PIC. Unpublished manuscript.

Lachar, D., Butkus, M., & Hryhorczuk, L. (1978). Objective personality assessment of children: An exploratory study of the Personality Inventory for Children (PIC) in a child psychiatric setting. Journal of Personality Assessment, 42, 529-537.

Lachar, D., & Gdowski, C.L. (1979). Problem behavior correlates of the PIC profile scales. Journal of Consulting and Clinical Psychology, 47, 36-45.

Lachar, D., Gdowski, C. L., & Snyder, D. K. (1984). External validation of the Personality Inventory for Children profile and factor scales: Parent, teacher, and clinician ratings. Journal of Consulting and Clinical Psychology, 52, 155-164.

Louick, D.J. (1971). The development of a cerebral dysfunction scale using the Personality Inventory for Children. Dissertation Abstracts International, 32, 3009-3030B.

MacMillian, D. L., Jones, R. D., & Aloia, G. F. (1974). The Mentally retarded label: A theoretical analysis and review of research. American Journal of Mental Deficiency, 79, 241-261.

McCarthy, J. M. & Paraskevopoulus, J. (1969). Behavior patterns of learning disabled, emotionally disturbed and average children. Exceptional Children, 36(2), 69-74.

McDermott, P.A. (1980). Congruence and typology of diagnosis in school psychology: An empirical study. Psychology in the Schools, 17, 12-23.

Meyers, G.H. (1974). A defensiveness scale for the Personality Inventory for Children. Dissertation Abstracts International, 34, 3504-3505.

Meyers, J., Martin, R., and Hyman, I. (1977). School consultation. Philadelphia, Pennsylvania: Temple University.

Mischel, W. (1968). Personality and assessment. New York: Wiley. Mowder, B.A. (1980). Pre-intervention assessment of behavior disordered children: Where does the school psychologist stand? School Psychology Review, 9(1), 5-13.

Mischel, W. (1971). Introduction to personality. Chicago: Holt, Rinehart and Winston.

Mowder, B. A. (1980). Pre-intervention assessment of behavior disordered children: Where does the school psychologist stand? School Psychology Review, 9(1), 5-13.

Murnstein, B.I. (1963). Theory and research in projective techniques. New York: Wiley.

Murphy, B.G. (1984). The use of the PIC subscales to differentiate learning disabled, slow learner, educable mentally retarded, and noneducationally handicapped students. Dissertation Abstracts International, 8518330.

Novick, J., Rosenfeld, E. Block, D. and Davidson, D. (1966). Ascertaining deviant behavior in children. Journal of Consulting Psychology, 30, 220-238.

O'Leary, K.D. & Johnson, B.J. (1979). Psychological assessment. In H C. Quay & J.S. Werry (Eds.) Psychopathological Disorders of Childhood (2nd Ed.) New York: Wiley.

Otis, A.S., & Lennon, R.T. (1969) Otis-Lennon Mental Ability Test Technical Handbook. New York: Harcourt, Brace & World Inc..

Peterson, C.R., & Hart, D.H. (1978). Use of multiple discriminant function analysis in evaluation of a state-wide system for identification of educationally handicapped children. Psychological Reports, 43, 743-755.

Peterson, C.R., & Hart, D.H. (1979). Factor structure of the WISC-R for a clinical referred population and specific subgroups. Journal of Consulting and Clinical Psychology 47, 643-645.

Peverill, J. (1970). A scale for the identification of learning disability using the Personality Inventory for Children. Dissertation Abstracts International, 31, 1548B.

Porter, R. B., & Cattell, R. B. (1968). IPAT Children's personality questionnaire. Urbana, Illinois: Institute for Personality and Ability Testing, Revised 1975.

Porter, J. E., & Rourke, B. (1985). Socioemotional functioning of learning disabled children: A subtype analysis of personality patterns, In B. Rourke (Ed.) Neuropsychology of Learning Disabilities. New York, New York: Guilford Press.

Quay, H.C. (1979). Classification. In H.C. Quay and J.S. Werry (Eds.) Psychopathological disorders of childhood. (2nd Ed) New York: Wiley.

Reynolds, M.L., & Balow, B. (1972). Categories and variables in special education. Exceptional Children, 38, 357-366.

Rogers, C. (1931). Personal Adjustment Inventory. New York: Association Press.

Rourke, B. (1985). Neuropsychology of learning disabilities. New York: Guilford Press.

Schnel, J. (1982). The utility of the student behavior checklist and the Personality Inventory for Children to assess affective and academic needs of students with learning disabilities. Dissertation Abstracts International, 43, 2291A.

Schooler, D., Beebe, M., & Koepke, R. (1978). Factor analysis of the WISC-R scores for children identified as learning disabled, educable mentally impaired, and emotionally impaired. Psychology in the Schools, 15, 478-485.

Seat, P. (1969). The construction of a general maladjustment scale for the Personality Inventory for Children Dissertation Abstracts International, 30, 1907B.

Seat, P. (1971). Construction of an Infrequency Scale for the PIC. Unpublished manuscript. In R.D. Wirt D., Lachar, J.K. Klinedinst, and P.D. Seat (1973). Multidimensional description of child personality: A manual for the Personality Inventory for Children, Los Angeles: Western Psychological Services.

Seat, P. (1973). Construction of a Lie Scale for the PIC. Unpublished manuscript. In R.D. Wirt,, D. Lachar, J.K. Klinedinst, and P.D. Seat (1973). Multidimensional description of child personality: A manual for the Personality Inventory for Children, Los Angels: Western Psychological Services.

Seat, P., & Wirt, R.D. (1971). Construction of an F scale for the PIC. Unpublished manuscript. In R.D. Wirt, D. Lachar, J.K. Klinedinst, and P.D. Seat (1977). *Multidimensional description of child personality: A manual for the Personality Inventory for Children*, Los Angels: Western Psychological Services.

Seat, P., & Wirt, R. D. (1971). Construction of a K scale for the PIC. Unpublished manuscript. In R.D. Wirt, D. Lachar, J.K. Klinedinst, and P.D. Seat, (1977). *Multidimensional description of child personality: A manual for the Personality Inventory for Children*, Los Angels: Western Psychological Services.

Seat, P., and Wirt, R. D (1979). Construction of a lie scale for the Personality Inventory for Children (PIC). Unpublished manuscript. In R.D. Wirt, D. Lachar, J.K. Klinedinst, and P.D. Seat, (1977). *Multidimensional description of child personality: A manual for the Personality Inventory for Children*, Los Angels: Western Psychological Services.

Sines, L. K. (1959). The relative contribution of four kinds of data to accuracy in personality assessment. *Journal of Consulting Psychology*, *23*, 483-495.

Sines, J.D., Pauker, J.D., Sines, L.K., & Owen, R.D. (1969). Identification of clinically relevant dimensions of children's behavior. Journal of Consulting and Clinical Psychology, 33, 728-734.

Stewart, D. (1971). The construction of a somatizing scale for the Personality Inventory for Children. Dissertation Abstracts International, 32, 572B.

Ullmann, L.F. and Krasner, L. (1969). A psychological approach to abnormal behavior. Englewood Cliffs, N.J: Prentice-Hall.

Walker, H.M. (1970). Walker Problem Behavior Identification Checklist Manual. Los Angeles: Western Psychological Services.

Walker, H.M. (1983). Walker Problem Behavior Identification Checklist Manual-1983 Revision. Los Angeles: Western Psychological Services.

Webb, M.L. (1977). Individual differences in personality and adjustment of exceptional children. Unpublished doctoral dissertation, University of Utah.

Wechsler, D. (1974). Manual for the WISC-R. New York: Psychological Corporation.

Wirt, R. D., & Broen, W. E. Jr. (1958). Booklet for the Personality Inventory for Children. Minneapolis: authors.

Wirt, R. D., Hampton, A. C., & Seat, P. D. (1972). The psychometric prediction of delinquency. In Roff, M, Robins, L. N. and Pollak, M. (Eds.). Life history research in psychopathology (Vol. 2,pp. 66-76). Minneapolis: University of Minnesota Press.

Wirt, R.D. & Lachar, D. (1981). The Personality Inventory for Children: Development and clinical applications. In P. McReynolds, (Ed.). Advances in psychological assessment. (Vol. 5). San Francisco: Jossey-Bass.

Wirt, R. D., Lachar, D., Klinedinst, J. K., & Seat, P. D. (1977). Multidimensional description of child personality: A manual for the Personality Inventory for Children, Los Angels: Western Psychological Services.

Wirt, R. D., Lachar, D., Klinedinst, J. K., & Seat, P. D. (1984) Multidimensional description of child personality: A manual for the Personality Inventory for Children, 1984 revision. Los Angels: Western Psychological Services.

Wirt, R. D., Seat, P. D., & Broen, W. E., Jr. (1977). The Personality Inventory for Children. Los Angeles: Western Psychological Services.

Wolfensberger, W. (1972). The Principal of Normalization in Human Services Toronto: National

Institute on Mental Retardation.

Zubin, J., Eron, L. D. & Schumer, F. (1965). An experimental approach to projective techniques. New York: Wiley.

APPENDIX A

Invitation to Partcipate in the Study

(Researcher's return address
and phone number)

Dear Mrs. ____________ ,

Thank you for agreeing to participate in this University of Alberta research project. I wish to restate that your cooperation is totally voluntary and not required by the Yellowhead School Division. Enclosed is the questionnaire.

The purpose of the research project is to determine whether the enclosed questionnaire is useful as a screening device for identifying students who require special education services.

The questionnaire is coded. Do NOT write your name or child's name on the questionnaire to ensure confidentiality.

Please read each of the statements in this booklet and decide whether it is true or false as applied to (child's name).

Please write "T" for True or Mostly True and "F" for False or Mostly False . Please try to answer all questions.

When you complete the questionnaire please return it by mail in the stamped enveloped provided.

Thank you in advance for your time and concern.

Yours truly,

Jim Luettgen,M.A.
Researcher